

Alcohol and the heart

The epidemiological association between moderate alcohol drinking and a lowered rate of heart disease has left researchers scrambling to explain the connection. A little alcohol has been found to lead to a higher blood level of HDL, the "good cholesterol," and in the May 17 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, Stanford University researchers report that moderate alcohol intake—about 1.3 ounces of ethanol a day—is also associated with higher levels of apolipoprotein-1 (apo A-1). The protein is a component of HDL and, some scientists believe, may be a more accurate measure of the number of circulating HDL particles than measuring HDL alone.

The researchers, from the Stanford Center for Research in Disease Prevention (SCRDP), studied the blood of 24 men who customarily drank up to three drinks a day. They had half the men abstain for a six-week period. While the blood levels of triglycerides, total cholesterol and other factors related to heart disease didn't change in either group, the apo A-1 levels dropped.

That doesn't mean everyone should go out and start drinking. "It's true people who drink one or two drinks a day needn't be advised to quit drinking for their health," says Stephen Fortmann, head of SCRDP. "But we also don't advise people to start drinking for their health. There's not enough evidence for that." The alcohol/apo A-1 connection remains to be explained. Fortmann suggests the answer may lie in alcohol's effect on liver metabolism, since the liver makes HDL and apo A-1.

Twisted runners

Add another hazard—albeit minuscule—to running. Timothy L. Pruett of the University of Minnesota in Minneapolis and his colleagues treated two marathoners who developed cecal volvulus, a twisting of the first portion of the large intestine that obstructs the movement of bowel material and causes great pain. It can be fatal if not surgically corrected.

These weren't just any runners. One, a 6-foot-3½-inch, 160-pound man, ran 50 miles a week and his best marathon time was 3 hours, 54 seconds. The second was a 5-foot-8-inch, 128-pound marathoner with a personal best of 2 hours, 30 minutes. Neither had any of the traditional risk factors for cecal volvulus, such as a pelvic mass or pregnancy, the researchers report in the May 9 *NEW ENGLAND JOURNAL OF MEDICINE*. The tissue that stabilizes the intestines was extra-thin in these very lean men, and the two were probably among the 20 percent of the population whose intestines, from birth, aren't firmly tacked down. The two factors probably allowed the twisting, says Pruett.

Medicine capsules

- Accidental or deliberate injuries are the leading cause of deaths in people under 44, according to a National Research Council report issued last week. These preventable deaths, due to motor vehicle crashes, firearms, falls, jumps, drownings, poisonings, fires and burns, are "the principal public health problem in America today," says the council. Their recommendation—a research center within the Centers for Disease Control to study injuries.

- Blood pressure measured during exercise is a better indicator of an enlarged heart muscle than readings taken at rest, report researchers at Hahnemann University in Philadelphia in the May *JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY*. In 67 patients with mild hypertension, they found no significant correlation between resting blood pressure and the heart abnormality, but found that 22 of 29 patients with high readings during exercise had an enlarged heart muscle as detected by ultrasound.

- A California woman bore septuplets last week, five of whom were alive at press time. She had taken a fertility drug.

JUNE 1, 1985

Raising sensitivity to acidity trends

Extensive monitoring programs are now in place in the United States, Canada and Europe to determine the relationship between the acidity of precipitation and the acidity of fresh water. This requires precise measurements over long time periods of the water's hydrogen ion concentration, or pH. However, conventional electrochemical methods for measuring pH are sometimes unreliable because dissolved organic material interferes with the instrument.

In the May 9 *NATURE*, Andrew L. Herczeg and his colleagues at the Lamont-Doherty Geological Observatory in Palisades, N.Y., and David W. Schindler of the Freshwater Institute in Winnipeg, Manitoba, contend that "the present strategies for monitoring temporal trends in the acidity of fresh waters will not yield results sensitive enough to detect trends in acidity even on a 10-year timescale." In their paper, the researchers suggest an alternative scheme for tracking acidity trends, particularly in lakes not yet acidified.

Their method is based on calculations using careful measurements of the amount of dissolved inorganic carbon in a water sample and the partial pressure of carbon dioxide in the air above a lake. "This scheme eliminates biases inherent in pH electrode determinations," the researchers report, "and minimizes the perturbations in acidity caused by changes in the [carbon dioxide partial pressure] of lake waters associated with biological cycles."

Too much of a good thing?

Experiments to test the idea that fertilizing nitrogen compounds in atmospheric pollutants may be indirectly harming trees (SN: 4/13/85, p. 228) have started at the Boyce Thompson Institute for Plant Research in Ithaca, N.Y. "The occurrence of tree decline at locations where deposition of pollutants from the atmosphere is high provides circumstantial evidence for chronic stress by pollutants as the cause," says plant physiologist Jay S. Jacobson, who heads the study. "But there is no proof of this or any agreement on how pollutants reduce tree growth and increase mortality."

For the next four years, the researchers, working first in laboratory greenhouses, will expose red spruce and balsam fir seedlings growing in their native soils to a simulated acid mist that contains nitrates. By also simulating the onset of autumn and spring frosts and conditions during winter freezes, they hope to see the effects, if any, of artificially prolonging the growing season on the ability of these seedlings to withstand such stresses. Later, field experiments will be conducted at New York's Whiteface Mountain and in Vermont.

Lignin's orderly structure

Lignin, the polymeric "glue" that holds together and fills the space between cellulose fibers in woody plants, has a highly organized structure at the molecular level—more organized than most researchers have hitherto suspected. This discovery is one result from a research program at the Institute of Paper Chemistry in Appleton, Wis., aimed at studying how chemical structure is related to the visible form of a plant. The study involves mapping in detail the molecular structure of plant components.

The result isn't particularly surprising to chemist Rajai H. Atalla, who directs the research. Cellulose and hemicellulose within cell walls of woody tissue are highly oriented. It seems unlikely, then, that lignin would be more or less random, he says.

Atalla's experiments show that cellulose chains in the cell walls of wood tissue from black spruce are oriented in planes perpendicular to the cell's cross section, while lignin turns out to be oriented so that most of its rings of carbon atoms are parallel to the plane of the cell wall.

345