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## Alcohol, diet and liver damage

Although alcoholism is known to contribute to cirrhosis of the liver, physicians have not been sure how much of the disease is due to alcohol per se, and how much is due to an inadequate diet. Now liver specialists in New York City have shown that alcohol, not an inadequate diet, is the cause of cirrhosis. This finding calls into question the value of trying to prevent cirrhosis in alcoholics merely by giving them good diets. On a positive note, however, the research suggests that liver damage can be detected in alcoholics before it progresses to cirrhosis.

The research group is headed by Charles S. Lieber, chief of the Liver Disease and Nutrition Section of the Bronx Veterans Administration Hospital and professor of medicine at Mount Sinai School of Medicine. Lieber and his colleagues report their findings in the February PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES.

In the late 1960's, Lieber and colleagues found that fatty liver, the most benign stage of cirrhosis, could be produced in volunteers given alcohol with adequate diets. Fatty liver, however, is still a fully reversible pathological condition, and the question remained whether alcoholic hepatitis, which is more severe than fatty liver, and cir-

rhosis, which is more severe yet and irreversible, could also be directly linked to alcohol ingestion rather than to a deficient diet.

This question could not be studied in volunteers in view of the severity of the damage involved. And animals were reluctant to consume enough alcohol to produce damage when the alcohol was given as part of the drinking water. Finally Lieber's group solved the problem by incorporating alcohol in totally liquid diets.

Specifically, they gave 15 baboons totally liquid diets that contained adequate nutrients and 50 percent of the animals' caloric needs in alcohol. The baboons remained on this diet for an average of 15 months. During this time, they developed the sequential stages of liver damage seen in human alcoholics. All developed fatty liver; five progressed to hepatitis and five progressed still further to cirrhosis.

"These findings," Lieber concludes, "have two implications. The first is that we physicians have to give up the hope that we can prevent cirrhosis in the alcoholic merely by controlling the diet. The second is that we can now help alcoholics avoid cirrhosis by taking liver biopsies to see what stage of liver damage they're at." □

## Drinking water standards still murky

Soon after it was announced last fall that cancer-causing substances had been found in the drinking water of a few American cities, public pressure mounted on Congress. The response was the rapid passage of the Safe Drinking Water Act of 1974. The act requires the Environmental Protection Agency to, among other things, set national minimum drinking water standards. And now it has—but not without some criticism.

The EPA has proposed interim standards for maximum levels of inorganic and organic chemicals, pesticides, microorganisms and turbidity. These are almost identical to 1962 Public Health Service standards and in the present form would require almost no modification by industry. Following a three-month period for comments and amendments, the interim standards will be put into effect, and "probably be more stringent," an EPA spokesman says. Permanent standards will not be set until data on the health effects of pollutants are collected this year and next.

The agency is conducting some of the research itself (SN: 11/16/74, p. 311) and is contracting some with the National Academy of Sciences. An official EPA statement suggests that at

the end of 1976, the NAS will propose specific pollutant levels. But an NAS spokesman says the academy is "not likely to recommend safe levels" for carcinogens and other hazardous substances. Delimiting these levels would involve more than science, he says, and politics and economics are outside the NAS's purview in this case.

An attorney for the Washington-based Environmental Defense Fund, Jackie Warren, says the proposed interim standards are "disturbing" and have omitted needed regulations for radiological materials, the pesticides Aldrin and Dieldrin and carcinogenic substances. A spokesman from EPA's Water Supply Division says a radiation standard will be proposed in mid-April. In a Catch-22 switch, Aldrin and Dieldrin were removed from the regulated pesticides list and placed on the carcinogen list—which is unregulated. Special regulations for the two pesticides may follow current studies. The lack of standards for carcinogens is "quite defensible," the spokesman says, "because there is not enough data to do otherwise." Assigning specific numbers to human cancer risk is not easy, he says, and carcinogen standards probably won't be set for at least 18 months. □