Behavior

None for the road

"I can quit drinking anytime I want to—I've done it hundreds of times."

That old comic one-liner illustrates the all-or-nothing nature of alcoholism described in a new study of problem drinkers. John E. Helzer and his co-workers at Washington University in St. Louis report that less than 2 percent of 1,065 alcoholics were controlled, "social" drinkers five to seven years after receiving treatment for their problem.

"This study suggests that there is little cause for optimism about the likelihood of an evolution to long-term, stable, moderate drinking among treated alcoholics," say the researchers in the June 27 NEW ENGLAND JOURNAL OF MEDICINE.

A previous research project indicated that alcoholics could be taught with behavior therapy to become moderate drinkers, but its methods and results were criticized by several investigators (SN: 10/11/82, p. 168).

Helzer and his colleagues conducted personal interviews, reviewed records, or both, for alcoholics treated at any of four St.Louis-area medical and psychiatric facilities between 1973 and 1975. Nearly 79 percent were still drinking heavily, while 15 percent never drank alcohol, 4.6 percent alternated between moderate drinking and abstinence and only 1.6 percent were regular moderate or controlled drinkers.

The scientists used a three-pronged definition of moderate drinking: some drinking in at least 30 of the previous 36 months, no excessive consumption (seven or more drinks per day on four or more days in a month) and no social, medical or legal problems due to alcohol in the preceding three years.

The subjects most likely to become controlled drinkers were female and had a history of less severe drinking problems.

Alcoholics who do not seek medical attention may do better over the long haul than those who require treatment at some point, say the researchers. But the results suggest, add Helzer, that the "vast majority" of alcoholics receiving treatment should aim for total abstinence.

Treatments for alcoholism have a tremendous potential impact on society, note the investigators. An ongoing national survey, which has so far covered three major urban areas, recently found that 19 to 30 percent of all men had met psychiatric criteria for alcohol abuse or dependence at some time in their lives (SN: 10/6/84, p. 212).

The long—and unresolved—goodbye

The intense grief that follows the death of a loved one may linger for 10 years or more among a substantial number of people seeking psychiatric help, report University of California at San Diego investigators. "Unresolved grief" is associated with complaints of depression and a number of physical symptoms and "can be quite disabling," say psychiatrist Sidney Zisook and his co-workers in the June PSYCHOSOMATICS.

The researchers analyzed responses to an extensive questionnaire completed by 220 new patients seen at an outpatient clinic over a four-month stretch. Most patients came to the clinic requesting some form of "talk therapy." Of the 93 patients who reported the prior death of a first-degree relative, 38 felt they were still experiencing difficulties in dealing with the loss. The majority of deceased relatives were either fathers or mothers. The average time since the deaths was 14 years.

The scientists note that these patients reported significantly more difficulty with feeling depressed or sad and with physical problems such as headaches and sleep disturbances.

Self-reports are inconclusive and do not prove that unresolved grief causes physical and emotional symptoms, caution the researchers. They conclude, however, that lingering grief is "not uncommon" and should be checked for by clinicians when they evaluate new patients.

Earth Sciences

A new flash of lightning theory

When it comes to understanding what electrifies clouds and triggers lightning, "we're still where Benjamin Franklin left us," says physicist Peter Handel of the University of Missouri in St. Louis. Most current theories involve falling water droplets that polarize clouds by carrying negative charges down to their bases. But these ideas leave much unexplained, says Handel. For example, they can't account for sightings of lightning before rainfall and they can't explain how stratus clouds, without ever shedding a raindrop, can leak negative "dark currents" to the earth.

In the June 20 JOURNAL OF GEOPHYSICAL RESEARCH, Handel outlines a new theory which he says can account for most observations associated with lightning. His proposal is rooted in the recently discovered, unique dielectric properties of ice and water. In bulk, ice has no net polarization, but in small enough groups, the water molecules in ice are free to cluster together so that their dipole moments are aligned in the same direction. According to Handel's theory, once in the number of such small aggregates and the number of molecules in each group reach a certain limit within a cloud, a "polarization catastrophe" occurs in which all of the clusters spontaneously align—typically along the direction of a very weak fair-weather field between the earth and the ionosphere.

As the cloud becomes more polarized, positive charges at the bottom of the cloud and negative ions at the top attract free charges of opposite sign from the air. Lightning is triggered both inside the cloud and from cloud to ground, Handel suggests, when the individual aggregates of ice grow too large to hold a strong dipole. This rapidly annihilates the polarlity of the cloud as set up by the ice and suddenly releases the free positive and negative ions from their respective bonds at the cloud ends. Without having time to slowly slink away, the now rudely unanchored charges discharge via a lightning bolt.

Handel says this theory is strongly supported by past experiments and can provide a mechanism for the dark currents. It also can explain horizational, helical and positive lightning, he says.

Lightning likes to strike some sites

Lightning often seems to strike with a random pleasure of its own. Yet, on a large enough scale, there *is* some pattern to the flashes. A new study by two meteorologists at the National Oceanic and Atmospheric Administration (NOAA) underscores the important role local topology and weather play in determining where lightning strikes. And because of this link, the researchers say, lightning data can provide an unclouded way to track regional meteorology, especially when other tools, such as radar, are not available.

Raúl López and Ronald Holle of NOAA's Environmental Research Laboratories in Boulder, Colo., analyzed the location and timing of lightning flashes during June, July and August 1983 in two 300-kilometer-by-300-kilometer study regions in northeastern Colorado and central Florida. Their data came from lightning flash mapping systems that cover two-thirds of the United States and much of Canada. The researchers' results, recently submitted to MONTHLY WEATHER REVIEW, show that flashes do fall into general patterns.

In Colorado, the highest densities of flashes occurred along an arc nestled against the Continental and Palmer Lake Divides and generally followed the daily patterns of rainfall and wind flow measured by other techniques during previous summers. In Florida, the pattern was more diffuse, but it appears to reflect the patterns of land and sea breezes, which in turn may be controlled by the shape of Florda's coasts. Thunderstorms and lightning, the researchers suspect, congregate where the coastline bulges toward the sea, encouraging sea breezes to converge and build up into clouds over the land.