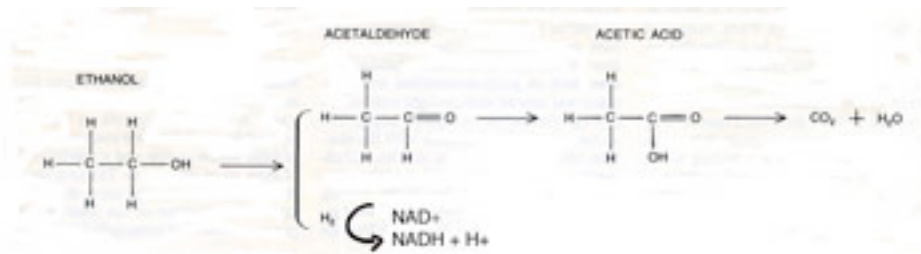


## Look at What Alcohol Can Do to Your Liver

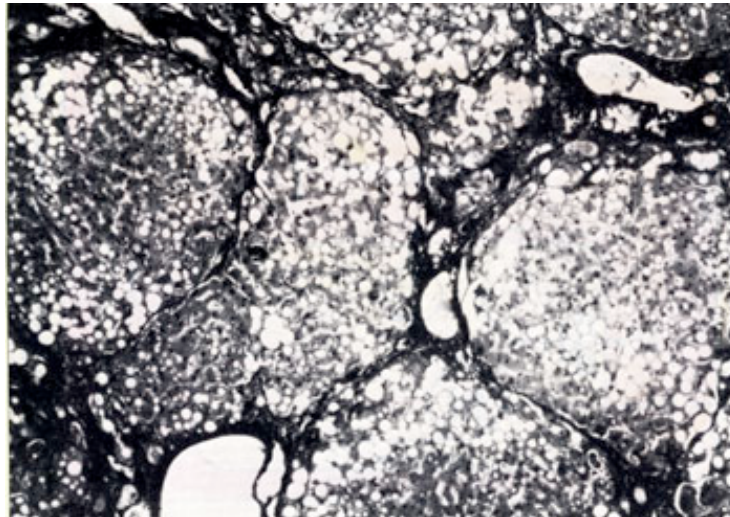
Alcohol is, of course, ethyl alcohol, or ethanol ( $\text{CH}_3\text{CH}_2\text{OH}$ ). Ethanol is what is produced by fermentation in yeast. It has long been recognized that heavy ingestion of alcohol is associated with disease of the liver. Until recently, it was thought that such disease was attributed not to alcohol itself but to the malnutrition that often accompanies excessive drinking. We now know that this is not the case. Alcohol is essentially foreign to the body. Like carbohydrates and fats, it has a high caloric value is readily absorbed from the gastrointestinal tract; unlike them, it is not stored in the tissues. Moreover, very little is eliminated through the lungs and kidneys; the body can get rid of alcohol only by metabolizing it. Again, unlike fats and carbohydrates, which can be oxidized by almost all tissues, alcohol must be metabolized in the liver, the only organ that contains the necessary enzymes. The organ-specificity of alcohol explains the concentration of so many of alcohol's harmful effects on the liver.

### Metabolism of Alcohol



**Oxidation of Ethyl Alcohol** (ethanol) is accomplished in several stages. In the liver cells two hydrogen atoms are removed from each molecule of ethanol to form acetaldehyde. The acetaldehyde is normally oxidized, primarily in the liver, to form acetic acid (as acetates), which is eventually broken down into carbon dioxide and water. The illustration omits the various enzymes and cofactors.

**Prolonged heavy drinking can lead to cirrhosis of the liver, even when the diet is good!**



**Cirrhosis of the liver** was produced in a baboon after four years of heavy alcohol consumption. This section of the baboon's liver, enlarged 70 diameters, shows the broad strands of fibrous connective tissue, like scar tissue, that have disrupted the once orderly array of liver cells, segregating nodules of irregularly arranged cells and heavily concentrated globules of fat.