

AUC must have certification (which was denied on 8 September by the Ohio Board of School and College Registration) to operate legally in Ohio. AUC says the school is exempt because no degrees or diplomas will be awarded while they are in Ohio. The court action has dragged on for 6 months, and is still far from being resolved. Many contend that AUC will dodge the state until next December, and then leave the country. (One observer noted that AUC's lawyers are some of the best in Cincinnati.) Says Frank Albanese, executive secretary of the Ohio State Board of School and College Registration: "They are just playing for time."

Heavy conflict in the Ohio courts took Tien by surprise, he told *Science*. Asked why he didn't wait until the campus in Montserrat was complete, Tien said: "I am a very aggressive-type person, also a

very ambitious-type person. . . . I want to do things right away. I never wait for tomorrow." And when problems come up? "I have the courage to overcome them."

If, for example, he should lose the case against the state, Tien told *Science* that he had a "contingency plan." It is pure simplicity. "We just move to another state, maybe another country."

Not just Ohio is upset with Tien. Two former AUC students, who dropped out last September, recently filed suit in the Hamilton County Court of Common Pleas. They say the school fell short of what it promised. "We're hitting them on two points," the students' attorney, Joseph E. Conley, Jr. told *Science*. "One is breach of contract, the other is fraud. The bottom line of our complaint is that AUC did not live up to what it promised in the small brochure sent out to prospective students."

Conley says he is asking for the return of his clients' tuition, room and board, travel expenses, lost wages, and, in addition, he is asking for \$100,000 in punitive damages. The suit was filed on 1 February 1979. AUC now has 30 days to respond.

It is ironic, but the school seems to have realized it fell a bit short. To wit, the small, orange booklet sent out to prospective students for the second semester's class, which began on 2 January, reveals a bit of tactical rewording. Instead of providing its students "with the most advanced technology available," the brochure now says that AUC offers "the opportunity to acquire a sound basic education in medicine and to foster the development of lifelong habits of scholarship and service." Mention of the means is conspicuously absent.

—WILLIAM J. BROAD

## How Natural Is the Science of Brewing?

*Very unnatural, says the Miller company*

Natural purity, though an imprecise concept, has fascinated people for ages—formerly as a trait of character, now more often as an attribute of food, drink, and other tangibles. It is a serious matter these days to claim that one's product is natural, as the war between the beer makers illustrates.

The two largest beer companies in America find themselves locked in a confrontation over which of them makes the purer beer, or to put it differently, over which uses the more noxious chemicals. The latest development came on February 1, when Miller Brewing Company, the second largest in the nation, accused Anheuser-Busch, the largest, of perpetrating a "campaign designed to mislead consumers into believing that its beers are natural products—which they are not." The charge came in a formal complaint (about an inch thick) filed this month at the Federal Trade Commission (FTC), which regulates advertising.

Miller specifically seeks to have the FTC stop Anheuser-Busch from using the words "natural" and "naturally" in its advertisements because, according to the complaint, the beers are "highly processed, complex products, made with chemical additives and other components not in their natural form." The brief cites earlier rulings and a staff report which sided against claims of natu-

ralness by other companies, and it argues that it is inherently deceptive to call something "natural" when it contains ingredients that are more than minimally processed. One reason the ads are deceptive, Miller claims, is that they may be used to induce buyers to pay more for the product.

More interesting than the legal challenge, however, is Miller's intimate description of what it believes to be the unnatural techniques its competitor uses in brewing its beers—brands such as Budweiser, Busch, Anheuser-Busch Natural Light, and Michelob. The description, spread abroad in a Miller press release handed out simultaneously with the filing of the brief, takes two vicious swipes at the Anheuser-Busch (AB) beers. One goes right for the jugular.

As far as Budweiser is concerned, the jugular is something described on its labels as "beechwood ageing" (sic), a unique brewing process whose name evokes an image of wooden casks resting in an unhurried, tradition-bound brewing cellar. As the label says, this method creates a taste "you will find in no other beer." Miller's lawyers would like to spike the image: "We seriously doubt," they wrote, "that consumers understand that 'beechwood aging' consists of dumping chemically treated lumber into a glass-lined or stainless steel beer stor-

age tank." Miller's "understanding" is that its competitor boils beechwood slats (18 by 2 by 1/4 inches) in baking soda and then drops them in the brewing vat for hours at a time to create the effect it calls beechwood aging.

Miller's other accusation was more alarming but less justified than the description of the lumber. Raising the specter of toxic contamination, Miller's attorneys wrote: "AB uses tannic acid as an additive in its beers. . . . Residues of this additive remain in the final packaged product sold to consumers." It sounds awful, especially when the contaminant is described as "a processed chemical . . . pentadigalloyl glucoside, with the empirical formula usually given as  $C_{76}H_{52}O_{46}$ ." Although the Food and Drug Administration (FDA) regards tannic acid as safe, Miller's lawyers wrote, "its classification is now under review by FDA and some question has been raised with respect to possible health hazards associated with a significant increase in consumption of this additive above current levels." Miller appended to its statement a table of tannic acid concentrations found in AB beers sampled around the country, showing a range from about 1 to 6 parts per million. Miller mentioned parenthetically that it does not use tannic acid. (It uses other chemicals.)

On closer examination, the Miller brief reveals that tannic acid in beer may not be so poisonous an additive as a quick reading might suggest. It does not say that the concentration of tannic acid in AB beers is higher than in other beers, nor that it has increased over the years. The report cited by Miller in raising the health alarm is informative in this matter. It states: "There is no evidence in the available information on tannic acid . . . that demonstrates or suggests reasonable grounds to suspect a hazard to the public when it is used at levels that are now current and in the manner now practiced [1977]."

George Irving, Jr., chairman of the committee at the Federation of American Sciences for Experimental Biology which wrote this report for the FDA, said that the conclusions on tannic acid were written in the "standard boilerplate" used on such occasions. In this instance, tannic acid was given the rating known as "number two," slightly less than the perfect bill of health—number one—which implies that no future health risks are envisioned. Examples of additives that have received the lowest rating—number four—are salt and caffeine, both considered more hazardous than tannic acid. Incidentally, a mug of tea is likely to contain much more tannic acid than a glass of beer.

Miller's brief goes into great detail on the chemistry of brewing, the doctoring done to adjust the acidity of water with calcium sulfate and sulfuric acid, and the use of heavy machinery to prepare and

cook the brew. All this detail is meant to demonstrate that beer making is industrial and not a natural process.

At first, AB issued a terse response, calling the Miller complaint a "publicity ploy without substance." About a week later, AB sent wholesalers a pamphlet titled, *Beer, the Natural Question*, in which it attempted to refute Miller's charges in detail. In this propaganda booklet, AB claims that the tannic acid used in its beers is a "natural material," that its beechwood "chips" are not a marketing gimmick but a "generations-old and extremely costly" natural catalyst used in the fermentation process, and that the chemicals added to the brewing water are the same as those used by municipal water companies. "Anheuser-Busch generally brews with the same water that comes from the tap in peoples' homes," the pamphlet says, but in some plants AB "further purifies and adjusts its water" using the "same materials and methods" used by water companies. Next, the pamphlet offers a sharp critique of the competition, including a list of "man-made" compounds allegedly found in Miller beers.

Like all good quarrels, this one has a long history. It was preceded more than a year ago by a similar attack on Miller in a brief filed at the FTC by Anheuser-Busch. In this challenge of November 1977, AB accused Miller of deceiving the public by packaging its American-made Lowenbrau beer in containers that were virtually indistinguishable from those used for the German beer called Low-

enbrau. Miller bought the right to use the German name, the labels, and the recipe, but it marketed a beer that many consider to be a distinctly inferior doppelgänger of the European beer. Anheuser thought consumers were being tricked into believing that Lowenbrau was German, and it asked the FTC to investigate.

In its petition, AB pointed out that the American Lowenbrau was artificially carbonated, produced from a malt of 28 percent corn grits, and doctored with "at least two non-natural additives" to produce clarity and good foam. The original beer is made of 100 percent barley malt, contains no additives, and is carbonated by natural fermentation, according to AB. The FTC declined to investigate these charges, but the petition had its desired effect. Miller suffered a bout of bad publicity and modified its advertising to make it plain that Lowenbrau is made in America.

The FTC thus far has shown no interest in becoming the referee in this name-calling contest because disputes over labeling of alcoholic beverages falls within the jurisdiction of the Treasury Department's Bureau of Alcohol, Tobacco, and Firearms. But the FTC may be compelled to take an active role. Miller spokesman Guy Smith said it is a "very serious matter," and "not at all a reprisal" for the earlier AB brief against Lowenbrau. Since the FTC has ruled on naturalness in other products, it may have no alternative but to define, once and for all, what is natural and unnatural in brewing.—ELIOT MARSHALL

## Scientists Quit Antibiotics Panel at CAST

*Academics and animal feeds do not mix*

It is difficult to bundle scientific objectivity and public advocacy into the same package, and few people even try to do it. One group that does try recently met with a spectacular failure. It is the Council for Agricultural Science and Technology (CAST), an association of industrialists, farmers, and agricultural scientists.

CAST devotes much of its time to showing the federal government why chemicals used on the farm are less dangerous than someone has claimed them to be. It often presents its arguments in the form of neutral scientific reviews. Because of the inherent tension in its work, CAST lives and breathes con-

troversy, but seems not to thrive on it.

In December seven academic scientists resigned from a CAST task force planning a report on the risks of feeding livestock large but less than therapeutic quantities of antibiotics to promote growth. The Food and Drug Administration (FDA) found in 1972 that the unregulated use of drugs in feeds posed a significant health hazard because it creates an "ideal environment" for the generation of antibiotic-resistant strains of bacteria that may infect humans. Since 1972 the FDA has been trying to regulate the use of antibiotics in animal feed, and up until now, agricultural lobbyists have argued successfully against

regulation. FDA Commissioner Donald Kennedy revived the campaign to control drugs in feed in 1977, but Congress intervened in September 1978, ordering the FDA to delay its decision until new hearings and studies have been completed, one of which will be conducted by the National Academy of Sciences. The CAST report was intended for use in these hearings, in congressional debates, and in news briefings, as an objective summary of costs and benefits.

In quitting CAST, six of the scientists signed a sharp letter of protest on 13 December accusing CAST of omitting unfavorable evidence on the risks of drug use from a draft final report, stressing favor-