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## Brazilian tree pours pure diesel fuel

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On a trip to Brazil last year, Melvin Calvin was intrigued by tales of trees that poured oil. The story went that you tapped a tree trunk and when it sounded right, you drilled a two-inch-diameter hole. Out flowed oil — or so an Amazon Indian claimed. “With a story like that, I had to go back and find that tree,” said the Nobel prize winning chemist who has spent the past few years developing experimental “petroleum plantations” of gopher plants (SN: 3/11/78, p. 153).

Calvin knew there were Brazilian relatives of the rubber tree that reduced carbon dioxide to hydrocarbons, but none that literally poured oil. On a return visit to Brazil six weeks ago, he was taken into the Amazon and introduced to the copa-iba tree (*Copaifera langsdorfii*). When the bung hole cut in the trunk of one was unplugged, out poured a golden liquid.

This oily sap had been used as a base for perfumes and as a healing ointment for cuts. But “nobody realized it was diesel fuel ‘til I got there this year,” Calvin told a press conference at the American Chemical Society meeting in Washington last week.

Later, in a presidential address at the same meeting, he added that the Brazilians have already “put [the sap] in a car, directly out of the tree, and it ran fine.”

What’s more, he said jokingly, “You don’t even need an oil company.”

The trees Calvin saw in the Amazon forest, and later outside Rio de Janeiro, were about 100 years old and 30 meters high, spanning a meter in diameter. It’s known that tapping trees of such size will yield 10 to 20 liters of the sesquiterpene hydrocarbons from a single bung hole within about two hours; they can be retapped at six-month intervals.

The trees appear to carry the hydrocarbon sap inside vertical, 0.2-millimeter-diameter pores running throughout the trunk. Calvin believes that what flows from a bung hole is only what has been stored in the vertical column above it during the previous six months. The big question is how many holes one can safely put in a single tree to maximize production. “No one I talked to ever drilled more than one hole in a tree,” Calvin says.

Already 2,000 seeds from the wild species have been germinated for planting in an experimental plantation. Calvin says that although there are few places in the United States outside of south Florida and Brownsville, Tex., where the tropical tree might survive, the Brazilians have promised to send the University of California scientist seeds from the next batch cultivated, probably sometime next spring. □

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## Female cadets: A rough start

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With the first group of women at the three major service academies poised to graduate in 1980, behavioral researchers are beginning to assess how females are adjusting to the military, and vice versa. Though preliminary findings are, as expected, mixed, Army, Air Force and Navy officials are expressing concern over the high attrition rate of women, as well as men, in the 1980 classes. The female dropout rate, however, appears to be declining for underclass members; and the Navy reports its attrition problem is less severe than that of the other two branches.

While the 1980 female dropout rate at the U.S. Naval Academy is 32 percent for the 1980 class, compared to 25 percent for males, West Point reports a 48 percent attrition rate, compared to 37 percent for men, and the Air Force Academy reports a 37 percent rate, which is actually lower than the 43 percent for men. Although service officials feel the inflated dropout figures undoubtedly involve the problems of being “pioneers” in a previously all-male world, their perplexity about the causes of attrition in the 1980 classes was apparent at a press conference in New York at the recent annual meeting of the American Psychological Association.

“It really hurts,” says Col. John W. Williams of the Air Force Academy. “We

aren’t keeping all the women and we don’t know why — it’s baffling.” The problem appears even more serious at West Point, where nearly half the 118 female 1980 class members have left school. Col. Howard T. Prince, a psychologist at the military academy, believes the true reasons for dropping out may not yet be known in many cases. Both the men and women who leave cite “changing career goals” and a dislike of a regimented environment, he notes. “But people may not always be honest in such situations,” he says. “What does ‘changing career goals’ mean?”

Part of the explanation may lie in the degree of regimentation at each academy. The Army’s plebe system, as well as the Air Force structure, incorporate somewhat stricter facets — such as the degree of physical exercise — than that of the Naval Academy, officials from all three branches agree. “The attitude toward physical exercise is more important among female dropouts than with men,” says Prince.

The Navy, however, has “changed some traditions,” says Pat Garvin, a clinical psychologist at the Naval Academy. Officials there have loosened somewhat regulations regarding selection of roommates (upper class women may room with lower class members) and have instituted discussion groups and workshops, including

one in “sexual survival skills.” Also, says Garvin, “the tradition of the Navy is built around ... the sea and the elements — a notion that involves some romanticism. The enemy is the ocean, rather than a human being.”

Both the Army and Air Force may take a page or two from the Navy’s book. “We’ve been looking [to change] the plebe system for 10 years,” Prince says. “We’re trying to reorient upper classmen about the purpose of the plebe system — to see it as a developmental process, rather than an initiation or ‘rites of passage.’” Future plans call for the training of upper class cadets to act as “peer counselors” for lower class members and their contemporaries alike.

The Air Force may be considering similar measures, particularly since males there appear to resent female cadets most conspicuously — as reflected by the abnormally high male dropout rate. “The males did not accept women from the first,” says Williams. “Some have changed now, but [many] believe even more strongly that women should not be in high level leadership or combat positions.” Part of the resentment there may exist because the women entered the academy with overall higher academic scores than the men, he suggests. Prince also reports a “bias” in attitudes in males’ ratings of female leadership abilities at West Point.

Stresses of first year military life are hard for both sexes, the officials note, but may be harder for women for various reasons. First-year rigors may be primarily responsible for the finding that eighty percent of the women at West Point don’t resume their normal menstrual cycles until Christmas leave, he says. Still, the trend in the newer classes suggest women are finding their niche, and female applications are up at the academies, while male applications are down. But like any “pioneers,” the class of ‘80 members have had to pay the price. Those who drop out may simply be disillusioned. Says Williams: “I believe they come and have a look and decide that though it sounded glamorous, it’s not really what they wanted.” □

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## New head named for FDA

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Jere Edwin Goyan, dean of the School of Pharmacy at the University of California at San Francisco, has been named commissioner of the Food and Drug Administration. Secretary of Health, Education and Welfare Patricia Harris cited his scientific experience, administrative skills and strong social commitment in announcing her intention to appoint Goyan. Goyan is considered a pioneer in pharmacy education for the innovative California program that stresses patient care. Goyan expects to take his post — subject to Senate confirmation — in October. He is the first FDA commissioner with a pharmaceutical background. □