

Icy theory explains strange sliding stones

Any philosopher pondering the creator's character should pack a suitcase, gas up the car, and head out to California's Death Valley National Park. One look at the famous sliding stones there will convince most people of the divine sense of humor.

For decades, geologists have struggled to interpret strange trails etched into the surface of Racetrack Playa, a dry lake bed neighboring Death Valley. At the end of each track sits a stone, the obvious perpetrator. But no one has actually witnessed the rough boulders—measuring up to one-half meter across and weighing around 300 kilograms—sliding across the flat ground.

According to textbooks, strong winds push the rocks after infrequent rains cover the lake surface with a thin film of mud. But geologists from Hampshire College and the University of Massachusetts, both in Amherst, now challenge the established idea. Their measurements of friction on the playa surface suggest that winds can budge the boulders only with the help of ice.

"The concept you have when you stand out there is that the wind should be able to blow these things around with ease. In

fact, the coefficient of friction for the biggest rock was about 0.8. It's a 700-pound rock; that means it would take a 600-pound force to move the thing. The wind can't possibly blow strong enough to do it," says Hampshire's John B. Reid Jr.

Reid and his coworkers wet the playa and measured how much force it took to move large and small blocks of dolomite. Since dolomite is rough, it doesn't move readily, even across slick mud, they report in the September *GEOLOGY*.

Individually, the stones do not provide enough surface area for the wind to push on, say the researchers. But when the lake surface freezes after a rain, wind passing over a large sheet of ice could generate enough force to drag several rocks embedded in the same ice, they suggest.

This theory, first proposed in 1955, was later rejected. But Reid's group found support for the idea while doing precise surveys of the trackways. Separate trails display exactly the same turns—which would be possible only if ice connected individual rocks.

Geologist John S. Shelton of La Jolla, Calif., however, suggests that some of the rocks move without ice. Shelton, who studied the problem on and off for 25



Stone trail on Racetrack Playa.

years, believes that winds can push the rocks when a thin layer of mud covers frozen ground, which Reid's group did not simulate. — R. Monastersky

Coffee: Brewing's link to cholesterol

Last year, Dutch researchers identified two compounds in coffee oils that can raise cholesterol in the blood. The good news, the group reported earlier this year, is that paper filters virtually eliminate those diterpenes from drip-brewed coffee (SN: 2/4/95, p.72).

Now, the same team offers generally reassuring news for many millions of people who perk up each morning with coffee brewed in some other fashion.

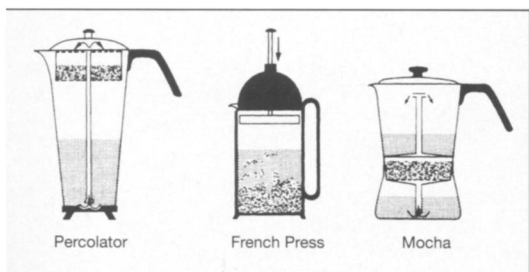
Rob Urgert and his colleagues at the Agricultural University in Wageningen, the Netherlands, collected samples of brewed coffee from restaurants and households in Europe and North Africa. They also reconstituted 13 regular and 6

Brothers, Folgers, and Maxwell House.

The instants contained only "minimal" diterpenes, Urgert's team reports in the newly released August *JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY*. Espresso, in contrast, contained the most—some 6 to 12 milligrams of the diterpene cafestol alone per 150 milliliters of coffee. However, because a typical serving of espresso is so small, a portion yielded only about one-quarter of the amount in a cup of such boiled brews as Scandinavian or Turkish and Greek coffees—types known to elevate cholesterol.

Urgert expressed surprise "that percolated coffee, though it's not paper-filtered, contained negligible amounts of [the diterpenes] cafestol and kahweol." He now suspects that the basket of grounds through which this brew repeatedly percolates serves as a filter for those compounds. Such filtering does not occur in a French press coffeemaker, whose plunger pushes grounds to the bottom of the pot after 5 or more minutes of brewing. This coffee met or exceeded the diterpene content of Scandinavian and Turkish or Greek brews.

The Dutch team concludes that drinking five cups of the increasingly popular French press coffee daily could raise cholesterol by 8 to 10 milligrams per deciliter of blood. It would take 15 or more servings of espresso or mocha to do the same. — J. Raloff



Urgert et al., *J. Agric. Food Chem.*

Popular nondrip brewing systems.

decaffeinated brands of instant coffee from five nations for analysis, and they brewed another 20 regular and 5 decaf brands from 10 countries. The latter included two U.S. brands each by Hills

Widely used drug prevents strokes

A common anticlotting drug could be the key to preventing 40,000 strokes a year. Results from a government-sponsored study of patient records show that the anticoagulant warfarin—sold under the brand name Coumadin—successfully prevents strokes in people with rapid, irregular heartbeats.

While physicians have known that anticoagulant therapy helps to prevent some types of strokes, the finding, announced on Sept. 7 by the Agency for Health Care Policy and Research, an arm of the U.S. Public Health Service in Rockville, Md., emphasizes the drug's beneficial role for people suffering from a condition known as atrial fibrillation (AF).

"Warfarin can reduce a person's risk for stroke by 50 percent, yet fewer than half of the people who are eligible for anticoagulation therapy [receive it]," says study leader David B. Matchar of Duke University in Durham, N.C.

More than half a million Americans suffer strokes each year. A stroke occurs when narrowed blood vessels, blood clots, or bleeding in the brain deprives the brain of oxygen and nutrients. Strokes constitute the third leading cause of death in the United States, and survivors often suffer loss of vision, speech problems, and difficulties in walking.