

Bringing up baby . . .

Q: What could be more normal than a burblingly blissful baby? **A:** A baby with its face squeezed into an angry howl.

In industrialized societies, crying is as normal in a baby as diapers are on it: Crying generally peaks when the baby is around six weeks old, at which point the squalls taper off. A weary parent might ask, are these tears really necessary?

Urs Hunziker and Ronald Barr, at Montreal Children's Hospital Research Institute, have identified one way to change infant crying patterns: Increase infant-carrying by parents.

In their study, mothers were assigned to a group asked to carry their infants for at least three hours a day, or to a group asked to provide their infants with extra visual stimulation. The 99 mother-infant pairs were tracked for the first three months of the baby's life. The extra carrying produced a "rather impressive change," the researchers write in the May *PEDIATRICS*. Two extra hours of carrying was associated with a 43 percent reduction in crying and fussing. The six-week crying peak was eliminated in these babies; instead, the mothers reported "increased awake contentment" in their babies.

Incessant crying, the researchers note, can lead to erosion of coping skills in parents, even child abuse. The supplemental carrying may have allowed mothers to detect infant distress more quickly. And, the researchers say, it may prevent many cases of "infant colic," a syndrome associated with excess crying and often without any underlying disease.

The study's results imply that the usual pattern of infant crying is normal only in the sense of being typical, the researchers write. They note that anecdotal reports from cross-cultural studies suggest that babies fuss less in societies where they are held more, adding that "[s]upplemental carrying may be a more effective approach to feeding and crying problems than the more traditional supplemental bottle."

. . . If there's a baby to bring up

Home pregnancy tests are touted as a way for a woman to learn, quickly and reliably, whether she is pregnant. Companies marketing the tests claim up to 99 percent accuracy, as early as six to nine days after a missed period. But are the tests as reliable as they claim?

According to an article in the May *AMERICAN JOURNAL OF PUBLIC HEALTH*, those statistics are too good to be true. Instead, Mary Doshi of Marquette University in Milwaukee reports that in a study of 109 women whose menstrual periods were overdue by six to 20 days, three brands of home pregnancy tests had an average accuracy of 77 percent. When the kits were used before the 10th day after the missed period, the average accuracy of the results dropped to 66 percent. Negative test results were less reliable than positive results.

All of the investigated kits (Daisy 2, e.p.t. and Answer) rely on an antibody reaction to a hormone released during pregnancy. According to Doshi, the inaccuracy of early tests has two causes: The kits aren't sensitive enough to pick up the small amounts of hormone present early in pregnancy; and women using them aren't experienced enough to interpret borderline results or to avoid minor procedural errors that might be critical when hormone levels are low.

Women should wait at least 10 days after a missed period before using a test of this sort, Doshi says. "The companies are competing, trying to decrease the days" a woman needs to wait before testing, she says. "My study says it should be the opposite: They definitely should increase the days, at least with the sensitivity of the reagents they've got now."

A spokesperson for Carter-Wallace, Inc., manufacturer of Answer, says, "The company feels very strongly about their own testing procedures and their products. They stand behind them."

Down and under in L.A.

In a million years, the land under Los Angeles may slide beneath the land to the north, shoving the city itself up the side of the San Gabriel Mountains. So says geophysicist Marcia McNutt of the Massachusetts Institute of Technology, who has evidence that southern California gradually is pushing itself northward.

The process of subduction, by which one of the earth's crustal plates pushes underneath another, is commonly observed in the ocean. The continents, on the other hand, have been considered too buoyant to undergo subduction on a large scale. However, in the May 10 *JOURNAL OF GEOPHYSICAL RESEARCH*, McNutt and MIT geologist Barbara Sheffels report evidence that subduction is occurring in California, at the point north of Los Angeles where the San Andreas Fault runs east and west.

McNutt and Sheffels report that there is an unusually high arch in the gravitational profile for the southern side of the fault in this area. The mountains are not massive enough to account for this feature, so the geologists conclude that the earth's mantle is pulling down on the southern side.

This subduction most likely is caused by the bend in the fault line, McNutt says. Along most of the San Andreas, the North American and Pacific plates slip alongside one another. At the east-west bend, the motion continues, but it causes one plate to move under the other, she explains.

McNutt notes that the amount of slippage between the Pacific and North American plates has been calculated at about 60 millimeters a year. If the subduction has been occurring for about 4 million years—the age of the mountains in the area—it would follow that the southern plate has pushed 240 kilometers under the northern plate, she says.

Counterpoint in impact debate

Scientists who believe that powerful volcanoes, rather than a gigantic asteroid impact, led to the extinction of the dinosaurs have a new argument for their side of the debate. It concerns the tiny pieces of shocked quartz and feldspar that have been considered evidence for the impact theory. These minerals are found in the layer of clay that was laid down all over the world 65 million years ago at the boundary of the Cretaceous and Tertiary periods, when the dinosaurs and about three-fourths of all animal species became extinct. The bits of quartz and feldspar contain microfractures that suggest they withstood a sudden and very intense shock—a greater shock than is created by most volcanoes. Therefore, impact theorists have said, they must have been created by an impact (SN:6/7/86, p.356).

But could the microfractures have been caused by exceptionally powerful volcanoes? That's a question nobody ever asked before, according to Charles B. Officer of Dartmouth College in Hanover, N.H., a proponent of the volcano theory. So Officer and three other geologists studied minerals from the depression left by Toba, the monstrous volcano that erupted on Sumatra 75,000 years ago. Toba had 400 times the volume of Krakatoa—the volcano between Java and Sumatra that erupted in 1883—and it left a caldera more than 50 times larger. In this depression, the geologists found minerals with shock features like those in the Cretaceous-Tertiary boundary layer, according to their report in the May *GEOLOGY*.

Officer and his colleagues do not conclude that their findings at Toba *prove* volcanoes deposited the Cretaceous-Tertiary boundary clay. But they say their work casts doubt on the mineral evidence for the impact theory. "This says you can create shock fractures in minerals from an impact or from a large volcanic eruption," Officer says. "So you cannot say, *a priori*, that if you have shock features, you have an impact."