

Giotto's close visit to another comet

Mission scientists are just beginning to analyze the wealth of data gathered when the European Space Agency's Giotto spacecraft flew past a comet called Grigg-Skjellerup on July 10. But information from two of the craft's instruments already indicates that the flyby established a new record: The craft apparently flew within 200 kilometers of the comet's nucleus, the closest visit yet to the core of a comet.

This surpasses the previous cometary benchmark, made when Giotto came within 600 kilometers of Comet Halley's nucleus during a much-publicized encounter six years ago (SN: 5/24/86, p.327). Unlike Halley, which passes near the sun once every 76 years, Grigg-Skjellerup visits the inner solar system every five years. Researchers speculate that such an orbit enables the sun to heat the icy body at a more constant rate, making it less likely that the comet would explosively eject as much gas and dust as Halley during its closest approach.

Giotto instruments did indeed indicate that Grigg-Skjellerup was losing far less dust and gas than Halley — no more than 100 kilograms per second, compared with Halley's 30 tons per second. But Grigg-Skjellerup's loss rate is about twice what researchers had estimated, reports Giotto project scientist Gerhard Schwehm of Noordwijk, the Netherlands. The finding suggests that the comet may have somewhat higher activity than believed, he adds.

Giotto couldn't take pictures of Grigg-Skjellerup, because dust encountered during the Halley flyby damaged the craft's camera and two of its other 10 detectors. Scientists thus relied on other means to infer the amount of material ejected by the comet. For example, two plasma detectors found evidence of a bow shock — a region where ions from the solar wind run into the heavier, slower-moving ions from the comet — as far away as 18,000 kilometers from the comet's nucleus. Researchers had mistakenly estimated that the comet's relatively puny ion emissions couldn't create a bow shock more than 6,000 kilometers from the nucleus.

Astrophysical Journal: The movie

Its gray cover, though smaller, resembles that of other supplements to the *ASTROPHYSICAL JOURNAL*. But if subscribers want to take a second look at a research study described in the July 10 supplement, they'll have to press the rewind button.

For the first time in its 97-year history, an issue of the *ASTROPHYSICAL JOURNAL* came with a video. Managing Editor Helmut A. Abt says the publication now expects to produce a video supplement every six months, graphically describing the text of the journal issue it accompanies.

The inaugural tape includes an animation sequence depicting the merger of two spiral galaxies, each rotating like a giant pinwheel; another scene shows the gradual clustering of newborn galaxies on their way to becoming today's lumpy agglomeration of celestial bodies. "A single frame from such a computerized sequence doesn't really tell the full story," says Abt, an astronomer at the Kitt Peak National Observatory in Tucson, Ariz. And at meetings, he adds, more and more astronomers are using videos to illustrate their talks and posters.

Abt notes that the cost of distributing the video — a collection culled from tapes submitted by researchers when they sent in manuscripts — is only about \$20,000, with postage accounting for one-third of that price. By early next year, he adds, the journal will release the first of a series of CD-ROM disks. Resembling a compact disk, each computer-readable disk will contain myriad data on star positions, redshift measurements, and other astronomical information that previously appeared in the *ASTROPHYSICAL JOURNAL* or its sister publication, the *ASTRONOMICAL JOURNAL*.

Canines offer compulsive clues

People diagnosed with obsessive-compulsive disorder (OCD) may wash their hands for hours to get rid of imagined impurities. Dogs suffering from canine acral lick dermatitis (ALD) constantly lick, scratch, or bite their paws or flanks, creating sores and sometimes requiring surgery or steroid injections.

Researchers now report that ALD — which occurs mainly in large dogs, such as Labrador retrievers — may represent an animal model of OCD with which to test new drug treatments. Certain drugs that increase the availability of the chemical messenger serotonin in the brain ease the symptoms of OCD and ALD equally well in similar doses over the same time period, reports a team led by psychiatrist Judith L. Rapoport of the National Institute of Mental Health in Bethesda, Md.

In three 11-week trials with 37 dogs exhibiting ALD, the serotonin-enhancing drugs clomipramine, fluoxetine (Prozac), and sertraline markedly reduced licking, whereas placebo pills and a drug that influences another chemical messenger proved ineffective, the scientists assert in the July *ARCHIVES OF GENERAL PSYCHIATRY*.

To look for anatomical abnormalities that might link the canine disorder to OCD, Rapoport's team has started a brain bank for dogs that displayed ALD during their lives.

Weeping over sleeping

Night falls, and across the United States the curtain rises on a classic domestic dispute. Scene one: Mother (or father) feeds baby, sings gently to baby, puts baby in the crib, and tiptoes out of the room. Scene two: Baby moans, cries, and shrieks for what seems like hours until a parent returns to the crib. Scene three: Frazzled parents race to the nearest bookstore and buy yet another manual of child-care advice.

Surveys indicate that for many parents living outside the United States, from rural Italian villagers to Japanese city dwellers, such bedtime strife never develops. Instead, infants sleep with their mothers for the first few years of life — at least in the same room and usually in the same bed.

Most U.S. parents avoid this tactic because they believe that infants who sleep alone develop a sense of independence and self-reliance that will serve them well later on, asserts a research team led by psychologist Gilda A. Morelli of Boston College in Chestnut Hill, Mass. "Security objects," such as a stuffed animal, and bedtime rituals ease the path to sleep for many infants, but parents often feel obliged to avoid offering any direct comfort during the night, Morelli and her colleagues observe in the July *DEVELOPMENTAL PSYCHOLOGY*.

Maya villagers living in Guatemala provide a stark contrast, the researchers maintain. The Maya mothers allow infants and toddlers to sleep with them for several years out of a reported commitment to forge a close bond with their offspring, the researchers note. Security objects and bedtime rituals do not appear in these households. When a new baby arrives, children sleep with another family member or move to a separate bed in the same room, usually with few problems.

Morelli and her associates base these conclusions on at-home interviews conducted with 14 Maya mothers and 18 middle-class U.S. mothers. Each participant had a child between 2 months and 28 months old; most had older children as well.

Sleeping arrangements in both communities reflect a kind of "cultural imperative" perceived by parents, the scientists contend. Morelli's team does not argue that either U.S. or Maya parents should change their practices.

"U.S. parents clearly see that their kids are stressed when they sleep alone," contends psychologist Edward Z. Tronick of Children's Hospital in Boston. "But the parents seem to accept this as a way to promote a child's independence and self-regulation of anxiety in other contexts."