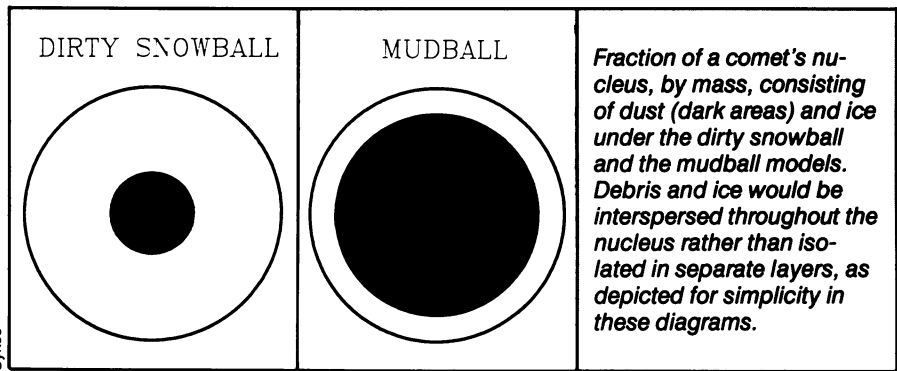


comet nucleus than astronomers had envisioned, Sykes says.

Says comet expert Paul R. Weissman of the Jet Propulsion Laboratory in Pasadena, Calif.: "I don't think of this [the new work] as a replacement for the Whipple model, but just that we've added new complexity to go along with new observations."

Weissman notes that the European Space Agency's Giotto spacecraft, which flew within 605 kilometers of Comet Halley's nucleus in 1986, found about three times as much rock as ice in that classic comet. The finding, at first considered an anomaly, agrees with the trail results of Sykes and Walker.

That ratio of rock to ice also matches the density of two denizens of the outer solar system: Pluto and Triton. Researchers have speculated since the early 1980s that short-period comets formed in the same region of the solar system as these bodies — between the present-day orbits of Uranus and Neptune. Previous estimates of comet densities seemed at odds with this notion, but the new report increases support for the theory. "[Our study] adds another piece of information to understanding the origin of short-period



comets," Sykes says.

He adds that the infrared dust trails show that comets expel more mass than researchers had estimated from previous observations. "Suddenly we have a whole lot more mass being lost than visible-light images had indicated," Sykes notes.

That realization, he says, leads to two tantalizing, though highly speculative implications. First, although researchers estimate that short-period comets last for tens of thousands of years, these celestial bodies may in fact waste away in half that time. And second, if the population of short-period comets remains fairly constant despite their shorter lifetime, then their proposed home base — an as yet unseen region of the outer solar system known as the Kuiper belt (SN: 4/21/90, p.248) — must have a far bigger reservoir

of new comets than scientists had imagined.

On a murkier note, Sykes and Weissman observe that the origin of the gritty debris in the infrared trails remains a puzzle. Researchers don't know whether these particles are fragments of the comet's crust or represent the basic building blocks of the comet's interior.

In the meantime, Sykes intends to keep searching for more of the dusty trails — both in IRAS data and in images taken by future infrared missions. Discovering many more such trails would substantiate the claim that all short-period comets are indeed mudballs.

To do this, Sykes faces the arduous task of scanning thousands more infrared images. Tracking dust is a dirty business, but someone has to do it. □

Letters continued from p.163

the research report, published in the *New England Journal of Medicine*, Shaywitz and her coauthors define dyslexia as a discrepancy score representing the difference between actual reading achievement and achievement predicted on the basis of measures of intelligence. The researchers examined the progress of achievement by certain students from grades 1 to 3 and grade 5 — and came up with certain questionable conclusions.

While one may predict "reading retardation" (mild or severe) on this basis, *dyslexia cannot be defined — or diagnosed — in this manner*. Dyslexia is not simply reading below one's IQ level; it is much more than just reading retardation. It is a language communication disability reflecting problems with words — in reading, spelling, writing, speaking and listening. Thus, a reading achievement test and an IQ test alone cannot determine the existence or nonexistence of dyslexia. The researchers' definition is much too broad and general, and children in the study could have problems for a whole variety of reasons.

The researchers stated that only 28 percent of the children classified as dyslexic in grade 1 were also classified as dyslexic in grade 3, and they went on to say that as many as two-thirds of the children given this diagnosis early will not meet the criteria in two years. Of course not, given their definition of dyslexia. Because of maturational and developmental factors and behaviors, any attempt at diagnosing dyslexia before age 8 is fraught with the possibility of misdiagnosis. Any experienced early-childhood teacher knows that some children learn to read more quickly than others, but that the

latter may surpass the former as time goes on. Such teachers know that many young students tend to reverse letters, may be confused about laterality, confuse words that are similar in appearance or sound, and are likely to have difficulties with sequencing. These experienced teachers also know that as young children mature and develop and move up through the grades, such behaviors tend to disappear as a result of natural maturation — which is obviously what happened to the students in Shaywitz's study. *Those first-grade children who no longer had dyslexia by third grade never had it in the first place.*

When dyslexic symptoms persist beyond that time when most childhood developmental conditions mature, then immediate steps should be taken toward positive identification and remediation should be provided if the child is found to have dyslexia. My concern is that after reading about Shaywitz's study, parents and educators may fall into the "he'll grow out of it" trap, and the child who is truly dyslexic will not receive the necessary understanding and services to alleviate the dyslexia.

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In the eye of the beholder

In "Hubble: A universe without end" (SN: 2/1/92, p.79), Capella is identified as "the sixth brightest star in the universe." This seems to imply that only five stars in the entire universe are brighter than Capella in absolute terms. Actually, Capella is the sixth brightest star in the universe only in terms of apparent magni-

tude; to our eyes, it is the sixth brightest star in the sky. In terms of absolute magnitude, there are many millions of stars brighter than Capella in the universe at large.

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Why not add DAD?

Did I detect a slight smile between the lines of "The diagnostic deluge" (SN: 1/18/92, p.44)? In that spirit, I would like to propose another addition to the guide to mental disorders. I call it DAD, for Disorder Addiction Disorder, which seems to afflict those compiling mental disorder manuals.

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CORRECTIONS

In "Dim galaxies shed light on early cosmos" (SN: 1/18/92, p.36), the low-surface-brightness galaxies discovered by Stacy S. McGaugh and his colleagues produced their first glimmers of starlight sometime in the past few hundred million years, not in the past few hundred thousand years as stated. Such a time period still means that starbirth in these galaxies "switched on" very recently, astronomically speaking.

The map included in "Desert sands yield ancient trading center" (SN: 2/15/92, p.100) was published circa A.D. 1550, not A.D. 150 as stated in information provided by the researchers. However, the map was constructed entirely from latitude and longitude estimates of Ptolemy, a geographer and mathematician who lived during the second century A.D.