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THIS WEEK

RESEARCH NOTES

ARTICLES

DEPARTMENTS

COVER: An old analytical technique called nuclear magnetic resonance spectroscopy is probing the chemical events in the lens that may precede cataract formation. See p. 236. (Detail from *Eye*, courtesy of the M.C. Escher Foundation)

Editorial and Business Offices
1719 N Street, N.W.
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Subscription Department
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LETTERS

A debate about charm

Assuming it didn't matter what you said as long as my name was correctly spelled, you did good. However, if you indeed were concerned with journalistic accuracy your article on charmed lifetimes (SN: 2/6/82, p. 88) fell far short.

Because of illness I was unable to attend the San Francisco APS press conference, and Mr. Thomsen took the words of our SLAC competitor as gospel without checking. The Fermilab experiment has been accepted by the physics community as the most solid of all charm lifetime experiments because we have the least bias in seeing decay lengths and uniquely identify over 75 percent of all decays. As a result, we quote lifetimes for D^0, $D^{\pm}$, $F^{\pm}$ and $\Lambda_c^{\pm}$ charmed particles. In the eyes of many scientists, our data constitute discovery of the F.

More recent experiments are commencing to gather data on D^0 and $D^{\pm}$ mesons, and the Fermilab numbers are consistent with the world average, whereas the D^0 lifetime from the SLAC group deviates. As SLAC is unable to see short decay lengths and can identify uniquely only 10 percent of all found decays, their results are open to question. Indeed, they even disagree with previous SLAC measurements on the ratio of charged to neutral D meson lifetimes. It should here be stressed that SLAC does not measure charged and neutral D meson lifetimes, but rather charged and neutral lifetimes of unknown type, as they identify so few of their decays.

As to the comment that the recent SLAC results agree with theory, *all* experiments agree with some theory from among the extensive published literature. The theory with which the SLAC results agree is circa 1975; the theories agreeing with data from the rest of the world are more recent and refined.

The Fermilab experiment has had a second run which should within a year quadruple the number of its found decays, and the electronic apparatus used to identify decays in this run is far more sophisticated than in the first run (which in turn was more sophisticated than the SLAC apparatus).

I realize that in the course of human events (and even in the scientific world) charmed lifetime studies constitute only a small part of the whole. However, should you again decide to cover this subject, please take care to write a broader and more factual story.

Neville W. Reay
Columbus, Ohio

Astronomy as an art form

In reference to letters debating "pro" vs. amateur status in astronomy (SN: 2/13/82, p. 99), I feel that the field should stay open, unlike so many others that have established a line with a group on one side that have "grandfathered" themselves as an exclusive flock with a rigid set of requirements to enter. Observational Astronomy is an *art* as well as a science, and people could well be ranked as in the days of its heritage: according to talent, ability, and accomplishment as *well* as position, and enjoy the designation of "pro." But then, of course, someone is sure to come along and try to make a new distinction, calling themselves a *"real* pro."

W. Chas. Leresch-Breuer
Louisville, Ky.

The first X-ray burster

I would like to clarify Dietrick Thomsen's statement (SN: 1/23/82, p. 52) that 4U1519-05 represents the first X-ray burster associated with a binary system. Actually, I believe this distinction belongs to the X-ray transient/burst source Centaurus X-4.

Over the last several years, evidence has accumulated that indicates transient X-ray sources and X-ray bursters may be related; Cen X-4 provides the best evidence to date. During the May 1979 transient event of Cen X-4, an eight-hour period was detected in X-rays by Kaluzienski et al. (1980, Ap. J., 241, 779), indicating a binary system. A classical type I X-ray burst was observed from Cen X-4 on May 31, 1979, with the HAKUCHO satellite (Matsuoka et al., 1980, Ap. J. Letters, 240, L137), implying a neutron star as one of the components. Spectra of the source during quiescence (van Paradijs et al., 1980, Ap. J. Letters, 241, L161) demonstrated that the other component of the binary system was a cool (K5) main sequence star which fills (or nearly fills) its Roche lobe and occasionally transfers matter over to the neutron star. This fits nicely into the scenario described by Thomsen in his article.

X-ray bursts from Cen X-4 have not been observed to occur at regular intervals, but they may be associated directly with the X-ray transient events. An X-ray burst was also seen from Cen X-4 in 1969, just prior to its first observed X-ray outburst.

Let me also take this opportunity to thank you for your fine magazine. Your timely reporting of current events and issues (from Astronomy to Zoology) are an integral part of my weekly reading.

William P. Blair
Cambridge, Mass.

Lead levels tell another story

I just read with interest your report on the work of Needleman, et al., on childhood lead (SN: 2/6/82, p. 88). It appears to me that the data are telling us another story in addition to the obvious class effect. The black statistics remain anomalous even in the absence of a present class difference. Middle class (>$15,000/year income) and rural blacks show significantly higher lead concentrations than do white counterparts. A number of explanations based upon the traditional high exposure arguments are possible; however, it seems to me that the most obvious explanation is that blacks metabolize ingested lead in a different way than do whites. This hypothesis ought to be investigated, for it has widespread implications with respect to allowable (or tolerable) levels of environmental lead.

David K. Snediker
Columbus, Ohio

Correction: In the article "Life Expectancy: the Great 20th Century Leap" (SN: 3/13/82, p. 186) the infant mortality rate in 1900 should read "100 per 1,000 births."

Correction: The formula in "Metaldehyde: The rain maker" (SN: 3/27/82, p. 219) should have been printed as follows: $([CH_3CHO]_4)$.

Correction: Robert Langridge, credited for the computer graphics representation of the DNA double helix (SN: 3/13/82, p. 181), is affiliated with the University of California at San Francisco.