

Astronomy

Dietrick E. Thomsen reports from Chicago at the 13th Texas Symposium on Relativistic Astrophysics

Ugly ducklings redux

Cygnets is the name given to a strange, highly energetic form of radiation that seems to come from a source in the constellation Cygnus. These cygnets have become the ugly ducklings of underground astronomy as controversy rages over their existence. A newly analyzed, positive result from a subatomic-particle detector under Lake Erie, which neither confirms nor denies previous sightings, is adding to the debate.

Subterranean astronomy is done with large detectors located deep underground to shield them from ambient radiation. A few years ago the detector in the Soudan mine in northern Minnesota indicated that strange, highly energetic, electrically neutral particles seem to come from Cygnus (SN: 10/12/85, p.231). The observation was supported by the NUSEX detector, located under Mont Blanc on the French-Swiss border. But the finding is emphatically contradicted by other detectors, particularly the one called Fréjus in a tunnel under the French-Italian border.

The controversy is complicated by questions of timing and the possible variability of the presumed source of cygnets, the X-ray source Cygnus X-3. Cygnus X-3 seems to undergo a strong outburst every autumn, and observers had awaited the 1986 outburst as an opportunity to settle the question. But the outburst didn't happen.

Meanwhile, the managers of the detector called IMB, located under Lake Erie at Fairfax, Ohio, have analyzed data from the 1983 outburst, when the whole business began. They have found a statistically significant observation. However, according to John Learned of the University of Hawaii at Manoa, its timing does not directly confirm the Soudan-NUSEX result.

If they are real, cygnets are something entirely unknown to particle physics. According to Keith Ruddick of the University of Minnesota in Minneapolis, scientists might soon produce them in the collisions of protons and antiprotons at the Fermi National Accelerator Laboratory in Batavia, Ill.

Intimations of gravity waves

Gravity waves are — theoretically — cyclic disturbances of gravitational forces that propagate themselves through space. Generated by astrophysical processes like supernovas or binary stars, they are gravity's analog to radio waves. Physicists are eagerly awaiting a demonstration that terrestrial detecting apparatuses can record them.

Individual gravity-wave detectors, of which there are several in the world, occasionally record vibrations sufficiently above background levels to qualify as possible gravity waves. But experts agree that a definitive observation will require coincident recording of the same event by two or more detectors of similar design and sensitivity. Last spring the first triple-simultaneous observations were undertaken by a detector operated by the University of Rome at the CERN laboratory in Geneva, Switzerland, one at Stanford University and one at Louisiana State University in Baton Rouge.

According to Guido Pizzella of the University of Rome, the observers have not had time to analyze the data for triple coincidences, but they do have one suggestive double coincidence between Geneva and Baton Rouge, simultaneous to within a tenth of a second.

Moreover, at the end of last April, a supernova blew off in the galaxy Centaurus A. The University of Rome detector recorded several rumbles then that coincided more or less with bursts of energetic neutrinos from Centaurus A recorded by a neutrino detector called LSD, located under Mont Blanc. Pizzella advised the symposium audience to take these indications "as an exercise. I do not claim we are observing gravitational waves, but we have reached a stage where we can begin to think astrophysically."

Biomedicine

AIDS: CDC report card . . .

An Institute of Medicine (IOM) report on the status of AIDS laboratory research at the Centers for Disease Control (CDC) in Atlanta concludes that morale and productivity within the specific division handling lab work are low, but that there has been no major suppression of data. The report, released last month, also states that while minor tampering with laboratory equipment took place, it caused no serious disruption or delay of experiments, and no significant loss.

The report was prompted by rumors of discontent within the branch as well as the claims by an outside research group of unnecessary delay in publishing results from a collaboration investigating the ability of a spermicide to prevent AIDS transmission. CDC Director James Mason and Sen. Lowell Weicker (R-Conn.), head of the Senate Appropriations Subcommittee on Labor, Health and Human Services, asked the IOM to investigate. Of the CDC's 192 full-time AIDS researchers, 27 work in the lab research branch; no questions have been raised about the performance of the other four AIDS divisions.

The IOM committee, part of the National Academy of Sciences, interviewed 31 present or former CDC researchers or collaborators, and investigated related documents. CDC revisions to and clearance for submission of the spermicide data took an unusually long time, but were not suppressed, the committee concluded. It could not rule out "purposeful minor tampering" and noted that it might have been caused by "an environment of distrust and dislike . . . between selected individuals. . . ." Among their suggestions: that changes be made in the organization and management of the laboratory, that laboratory meetings be held regularly, that authorship policies for research papers be mapped out and that basic and applied research efforts be separated.

. . . and lesbian transmission?

While male homosexuals were the first group in which AIDS was recognized, female homosexuality alone has not been considered a risk factor. But in the December *ANNALS OF INTERNAL MEDICINE*, Michael Marmor of the New York University Medical Center and his colleagues describe a case in which a lesbian who has denied drug use and had never received a blood transfusion evidently got AIDS from her drug-using female partner.

With only a single case report, lesbian-transmitted AIDS isn't a prime concern, says epidemiologist Harold W. Jaffe of the Centers for Disease Control. But the description "raises an interesting possibility," he says.

Physician, heal thy colleague

Ever think one of the benefits of being a physician would be perfect health care for yourself? Think again. According to a survey of more than 1,400 plastic surgeons by I. Kelman Cohen of the Medical College of Virginia in Richmond, 32 percent of the surgeons who had had aesthetic surgery — face lifts, nose jobs, hair transplants and the like — said they had complications following surgery. When they operated on their own family members, which roughly 40 percent of them did, the surgeons reported a complication rate of only 3 percent. The problems were along the lines of minor bruising or asymmetry.

"The data point out something we'd like to study," Cohen says. "Does the VIP syndrome adversely affect care? Maybe doctors do not get as good care as lay people." Other possibilities, Cohen says, are that the surgeons' families were less likely than the surgeons themselves to complain, or the surgeons were less likely to report the complaints of others.

Cohen plans to study general surgeons to see if they, too, report more medical problems. A plastic surgeon himself, he presented his findings at the recent meeting of the American Society of Plastic and Reconstructive Surgery in Los Angeles.