

ance in the laboratory situation.

But they add that many important questions remain unanswered. For instance, why were first-born infants most susceptible to maternal absences, and why did half the substitute-care infants show secure attachment to their mothers? Also, it is not known whether infants form secure attachments to nonmaternal caregivers. Clarification of these issues hinges on studies of larger samples and long-term follow-ups of securely and insecurely attached infants, says Barglow.

— B. Bower

Asbestos subpoena quashed

A New York State judge has turned down a subpoena request by the R.J. Reynolds Tobacco Co. of Winston-Salem, N.C., that had asked for access to the raw data representing two decades of a scientist's research on asbestos. Judge Ethel B. Danzig ruled that compliance with the subpoena would "place an unreasonable burden upon the medical and scientific institutions involved and would unduly disrupt [their] ongoing research." She also said a subpoena might have denied the researcher his right to first release of his yet-unpublished data.

Reynolds is a defendant in a lawsuit, now pending in California, that contends combined exposure to asbestos and smoking was responsible for the death of the plaintiff's husband. While preparing for the case, Reynolds's lawyers learned that the plaintiff intends to use expert witnesses whose testimony will rely on published research by Irving J. Selikoff, a renowned asbestos researcher at Mount Sinai School of Medicine in New York City. Since Selikoff refused to appear as a witness in the case, the Reynolds lawyers didn't know how they could probe the validity of Selikoff's published findings short of subpoenaing the raw data behind them: some 324 linear feet of material stored in 97 file-cabinet drawers and 250 bound volumes, according to Mount Sinai.

Collected over more than 20 years and still actively used, the data result from studies involving 18,170 individuals. Selikoff estimated that to ensure the study participants' confidentiality, it would take thousands of hours to purge their identities from his files. As a result, Mount Sinai, with the American Cancer Society's help, decided to fight the subpoena.

But the story isn't over. James Fyock, a spokesman for Reynolds, says the company plans to appeal the ruling. In addition, a similar subpoena request for Selikoff's data, filed with a U.S. District Court, was stayed pending resolution of this request, and may now be resolved.

— J. Raloff

Magic butterfly cleans up chips



Osamu Ueda is a renowned collector of real-life butterflies. But among those likely to gain him the most fame is this microscopic one, discovered while he was visiting the Massachusetts Institute of Technology.

The expert electron microscopist, who works for Fujitsu Laboratories in Kawasaki, Japan, found the butterfly and others like it in the silicon wafers used to make integrated-circuit chips while he was working with MIT's Kris Nauka and Mark Goorski.

The "butterfly" is actually a beneficial defect that Ueda found had formed during the high-temperature annealing of crystalline silicon in the processing of wafers to make chips. What makes it so special is that it removes metal impurities from the top 100 microns of a wafer — where they could alter the performance of any integrated circuits or devices eventually placed there — and locks them deep within the silicon.

Many techniques have been engineered to gather up and channel detrimental impurities, introduced during chip making, away from the regions where chip devices will operate. But such "gettering" processes can take 16 or more hours — far too long to be useful with the rapid thermal annealing techniques being developed for the processing of much smaller, very-large-scale-integration chips, according to MIT materials scientist Jacek Lagowski. Since the discovery, the researchers have developed a way to produce the butterfly intentionally. "We believe this butterfly is the only gettering process which can work in times on the order of seconds," says Lagowski.

As the inset diagram shows, the roughly 1-micron defect results from a three-dimensional deformation of the lattice structure of crystalline silicon. The butterfly pattern emerges only when the deformation is viewed at one of several select angles.

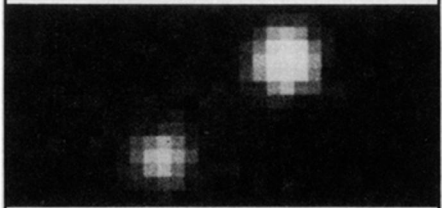
— J. Raloff

As of '87, he's Proteus Man

Neurofibromatosis, the genetic disorder that has come to be known as Elephant Man disease (SN: 6/6/87, p.359), was probably not the cause of the Elephant Man's deformities. That is the conclusion of a National Institutes of Health panel, which last week released its final report on the incurable disease. The report doesn't address directly the case of Joseph Merrick — the 19th-century "Elephant Man" who later became the subject of a popular movie and play. But according to panel chairman David A. Stumpf, it was the group's consensus that Merrick actually suffered from an extremely rare disease known as the Proteus syndrome. The updated diagnosis is of more than historical interest, as it may help to free neurofibromatosis victims from the fear of the severe deformation that is more properly associated with the Proteus syndrome. The experts recommend areas for further research, and one panelist predicts that the neurofibromatosis-causing gene will be definitively identified in the next year or two — a critical step in the development of a treatment or cure. □

Seeing double

Astronomers have found what they think is the first known pair of quasars, sitting neatly together some 12 billion light-years away in the direction of the constellation Crater. Only one of the two quasars, which are 4.2 arc seconds apart, registers in radio wavelengths, while both can be seen in the visible range. This rules out the possibility that the quasar is imaged through a gravitational lens, which would split the image of one quasar into two and cause both to be recorded identically in radio and visible wavelengths.



The spectra of the quasars, which could be circling one another or members of passing galaxies, also showed subtle differences in their physical makeup. Although a quasar has been known to exist in that region, December observations were first to uncover its binary nature. The study, led by the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass., will be published in an upcoming issue of ASTROPHYSICAL JOURNAL LETTERS. □