

To catch a supernova

The odds are better than even that astronomers alive today will witness a supernova, the thermonuclear explosion of a distant star which will blaze forth in a short-lived outburst of glory. This prediction was made in a paper presented to the meeting of the American Astronomical Society in Bloomington, Ind., last week by Sidney van den Bergh of the University of Toronto. The Canadian astronomer says that supernovas probably occur much more frequently than astronomers have believed, and while only four such stellar spectacles have been observed in our galaxy in the last thousand years, statistically at least one is overdue.

All four on record were sufficiently brilliant to be seen with the naked eye as "new" stars among the familiar star patterns in the skies. Probably most famous was that recorded in 1054 by Chinese astronomers as a "guest star" in the constellation Taurus. Its remnants can be seen in a telescope today as the famous Crab Nebula. The supernova of 1572 probably had a considerable influence on the course of astronomy since that time. It is reputed that it so impressed a young Danish law student that he switched his interests to the study of astronomy. His name was Tycho Brahe and the supernova of that year became known as Tycho's Star. The most recent supernova in our galaxy was seen in 1604 and bears the name Kepler's Star.

Van den Bergh believes many more supernovas have occurred in our galaxy, but because they did not reach naked-eye brightness they escaped being seen. Radio telescopes reveal what are believed to be a number of supernova remnants in our galaxy. Supernovas are continually seen in other galaxies as well. A statistical study of these events suggests that the average interval between supernova appearances in our galaxy should be about once every fifty years, give or take a few years, van den Bergh proposes.

"On the basis of these results there appears to be at least a 50-50 chance that a galactic supernova will occur during the lifetime of the present generation of astronomers," he says. On the likelihood of it being bright enough to be seen by the naked eye he was not so optimistic. Statistically, he says, the probability of a galactic supernova being as bright as the planet Jupiter (magnitude minus 2) is about one in eleven. About 22 percent should be brighter than a second-magnitude star, and another 17 percent would be brighter than sixth magnitude or at the lower limit of naked-eye visibility under the best conditions. The other 61 percent would require telescopes to view them.

When a star explodes as a supernova a large part of the matter it contains is shot away into the surrounding space as a shell of "dust" and gases that travels outward at speeds of 6,000 to 18,000 miles a second. After a few centuries the constantly expanding shell will measure many trillions of miles in diameter.

A supernova is estimated to radiate as much light energy in one year as our sun has put forth in the last billion years. Interstellar dust—mostly hydrogen atoms—in the space between us and the supernova will in most cases redden the light and diminish it to such an extent that few of these stellar holocausts have been seen by the naked eye.

"It is by no means obvious that a supernova in our galaxy would be discovered, or even be recognized as such, as soon as it occurs," van den Bergh observes. After a few days, most supernovas fade rapidly, and unless an astronomer just happened to make a photograph of the area in which a supernova occurred at just the right time, even modern-day astronomical photography with the largest telescopes would miss recording the event. At present there is no systematic search for galactic supernovas, but such a search should be scientifically profitable, van den Bergh believes. He proposes a photographic hunt using wide-angle cameras such as the 48-inch Schmidt telescope on Palomar Mountain, as well as radio telescopes and other methods. Infrared photography should be especially useful. Because supernovas are so luminous, the expanding light echoes surrounding them should remain visible for a few hundred years, he added. Man-made satellites such as Uhuru and the orbiting observatories circling above the earth's atmosphere could also keep watch for the expected blasts of X-rays and gamma rays from supernova outbursts, van den Bergh suggests. "Those astronomers who might tend to become discouraged while waiting for this momentous occasion might be consoled by the thought that the light of perhaps 500 supernovas that already have occurred in our galaxy is currently on the way to us," he concludes. □

Women's group formed

The National Research Council has become one of more than half a dozen major science organizations to incorporate a committee for and about women. In announcing this week the formation of the committee on the Education and Employment of Women in Science and Engineering, NRC said, "The committee has been established

to examine broadly the social, structural and institutional constraints that limit the participation of women in science and engineering, giving special attention to problems of sex discrimination in education and employment." Both the American Association for the Advancement of Science and the American Council on Education have established similar groups.

The committee, first discussed more than three years ago, will begin its activities in June. "When an institution of national character picks it up [a woman's committee] we feel like we're further along the line in bringing the idea into larger structures," Elizabeth Tidball, executive secretary of the committee, says of its initiation. The committee, she says, will be a positive, forward-looking group working more toward promoting new ideas than voicing grievances about discrimination. □

Lesbian fruit flies?

What appear to be lesbian fruit flies have triggered investigation into the insects' sex lives, and subsequent mating rituals, by Robert Cook, a French geneticist. Although the report, which appears in the March 20 NATURE, "sounds a little strange," to Seymour Benzer, a prominent entomologist at the California Institute of Technology, Cook has photographed rudimentary male courtship behavior between female fruit flies (*Drosophila melanogaster*). While the findings are "interesting," Benzer says he seriously doubts that there are genetic implications in Cook's work that may have any bearing on sexual abnormalities in humans. Cook agrees: "Lesbian behavior is not genetically dependent on any of these (chromosome) mutations since the behavior is easily retained when both chromosomes . . . are substituted for those of a laboratory strain in which lesbian behavior has not been observed." Rituals between Cook's special strain of female flies (bred to maintain a female sterile gene) involves head-on courtship, broken into short bouts in quick succession, but no attempts to copulate were observed.

Although the behavior looks very much like male courtship, Cook concludes that it might not definitely derive from that system, but may, instead, have evolved to serve a function of "spacing" or "aggression" between females, or as a response to the abnormal conditions imposed by breeding for sterile strains.

No adult animals other than human beings are known to prefer orgasmic intercourse regularly with their own sex; determining if an animal is homosexual is rare. □