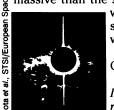
# **Astronomy**

Ron Cowen reports from Minneapolis at a meeting of the American Astronomical Society

### A massive star lights its surroundings

Shedding mass at a furious rate and shining 1.5 million times more brightly than the sun, the aging Milky Way star AG Carinae is having a final fling. Classified in this phase as a luminous blue variable, AG Carinae is some 50 times more massive than the sun. During this brief, but violent, period,



which lasts no more than 100,000 years, the star varies its brightness dramatically and will lose mass equal to as many as four suns.

The starlit gas and dust that surround AG Carinae – material presumably ejected by it

In this altered image of the star AG Carinae, researchers have blocked out starlight to highlight surrounding dust. Beams at top

and bottom are spillover light from the star, not dust.

in the past—may offer clues about the mercurial nature of this and other massive stars. But studying this circumstellar material, or nebula, has proven difficult with ground-based telescopes: The nebula is relatively small, faint, and too close to the dazzling light from the star to observe clearly.

In imaging the star and its surroundings, a new camera aboard the repaired Hubble Space Telescope has revealed previously unknown structure in the dust. Hubble's wide-field and planetary camera shows that what researchers had interpreted as a jetlike blob of dust is actually a network of bubbles, arches, and filaments, report Antonella Nota and her colleagues at the Space Telescope Science Institute in Baltimore. These structures are sculpted and swept up by the star's strong wind.

A major puzzle, says Nota, is how the dust formed and survived. The hot star would seem to sweep aside dust or vaporize it, yet some of the material lies within 1 light-year of AG Carinae. She speculates that the star was considerably cooler in the past and permitted dust to form more easily. Nota adds that a disk of gas may surround the star and absorb some of AG Carinae's intense heat. If so, this would shield the dust from imminent destruction.

### Cooling off Hubble's camera troubles

In April, Science News disclosed problems with the light detectors on Hubble's new wide-field and planetary camera (SN: 4/23/94, p.260). Operating the camera at -88°C, which is 10°C cooler than before, has now dramatically reduced the problem, says Hubble researcher John J. Hester of Arizona State University in Tempe.

At the warmer temperature, some stars appeared about 10 percent dimmer when imaged at the top of any of the detectors, known as charged-coupled devices (CCDs), rather than at the bottom. Scientists find that at  $-88^{\circ}$ C, the variation is at most 3 percent, Hester says.

Another concern at the higher operating temperature had focused on individual CCD picture elements, or pixels, that became damaged by incoming radiation and produced "dark current." This current, a spurious signal generated even when no light falls on a detector, is common and usually easy to subtract from a CCD image. But the dark current produced by some of the damaged pixels on the Hubble camera varied over time in an unpredictable way. At the lower temperature, the troublesome dark current has declined significantly, Hester notes.

Nonetheless, operating at a lower temperature means that contaminating material can more easily deposit on the CCDs, reducing their sensitivity in the ultraviolet. To rid the detectors of such deposits, scientists will warm the CCDs for several hours once a month.

## **Behavior**

## Schizophrenia: Promising drug...

Risperidone, an antipsychotic drug approved for use in the United States beginning this year, often diminishes hallucinations, delusions, apathy, and other symptoms of schizophrenia while avoiding some of the harmful and dangerous side effects caused by other antipsychotics, according to a study published in the June American Journal of Psychiatry.

In an 8-week trial, people hospitalized for schizophrenia improved substantially more on a moderate daily dose of risperidone than on either a higher daily dose of a standard antipsychotic drug, haloperidol, or an inactive placebo pill, contend psychiatrist Stephen R. Marder of the West Los Angeles Veterans Affairs Medical Center and psychopharmacologist Richard C. Meibach of the Janssen Research Foundation in Titusville, N.J. The foundation is a division of the company that markets risperidone in the United States.

Risperidone produced few tics or movement disorders, a serious problem in users of haloperidol and chemically related drugs, the researchers note. The new medication also caused no potentially fatal breakdowns in the body's immune system, an occasional reaction to the recently approved antipsychotic drug clozapine (SN: 5/23/87, p.324). However, longer studies must establish whether risperidone eventually produces such effects, Marder and Meibach note.

A total of 388 schizophrenic patients hospitalized at 20 medical centers participated in the study. Similar evidence for risperidone's superiority over haloperidol and placebo emerged last year from a multicenter study in Canada.

Risperidone blocks entry points on brain cells for two chemical messengers, dopamine and serotonin. The way in which it eases schizophrenia remains unclear, however.

Another new antipsychotic medication, remoxipride, also shows promise and may become available in the United States later this year. "There is now more optimism and effort in antipsychotic drug development than at any time in history," writes John M. Kane, a psychiatrist at Long Island Jewish-Hillside Medical Center in Glen Oaks, N.Y., in an accompanying editorial.

Researchers should examine whether schizophrenic patients given these new drugs show an enhanced response to various rehabilitation services, remarks psychologist Nina R. Schooler of the University of Pittsburgh.

### ... and infectious clues

A growing number of scientists suspect that schizophrenia stems from a derailing of brain development early in life. In support of this view, researchers found that an unusually large number of adult schizophrenics in Helsinki, Finland, were in the second trimester of fetal development during the 1957 worldwide influenza epidemic (SN: 9/19/87, p.180).

The same link between the 1957 epidemic and a secondtrimester risk of schizophrenia has since been noted in England, Wales, and several other countries.

Preliminary data now suggest that medically documented influenza infections occurred frequently in Helsinki women who gave birth to children later afflicted with schizophrenia, report Sarnoff A. Mednick, a psychologist at the University of Southern California in Los Angeles, and his colleagues.

Mednick's group located prenatal clinic files for 25 of 71 schizophrenia patients in the Helsinki sample. Of the 15 individuals exposed to the epidemic in the second trimester, 13 had mothers who definitely contracted influenza at that time. Of 10 patients exposed in the first or third trimesters, 2 had mothers with recorded influenza infections.

The pattern observed in this small sample requires confirmation in other populations, the scientists note in the current Schizophrenia Bulletin (vol. 20, no. 2).

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