

increase in brightness, suggests that this object almost certainly belongs to the low-mass X-ray binary (LMXB's) class of objects and in particular to the small sub-class of *X-ray Novae*. This sub-class includes such objects as: V 616 Mon 1975 (Mon X-1), V 2107 Oph 1977 (H1705-25), V822 Cen 1980 (Cen X-4) and V 404 Cyg 1989 (GS2023+338). Furthermore, the equivalent width of the HeII (468.6 nm) ($EW=2.5 \text{ \AA}$) and H_{β} ($EW=1.8 \text{ \AA}$) emission lines are consistent with the values found for other LMXB's (e.g. van Paradijs and Verbunt, 1984, see their Fig. 1).

Some Current Views of X-Ray Novae

The energy source during the paroxysm of LMXB's, and cataclysmic variables (CV's), is generally believed to be provided by two mechanisms: (a) the thermonuclear energy released by nuclear runaway of the accreted matter onto the surface of the degenerate companion, and (b), the gravitational potential energy released by the accreting material from the disk onto the compact star. At minimum, the luminosity of both CV's and LMXB's is mainly provided by the mass transfer rate. The first mechanism is commonly believed to explain the Nova explosion and the X-ray

bursts in some LMXB's while the second mechanism is believed to be responsible for the eruptions both of the dwarf novae and the X-ray novae. According to current understanding, mechanism (b) can be triggered by an accretion rate from the disk onto the white dwarf smaller than the mass transfer rate from the secondary to the disk (the so-called *disk-instability model*) and/or through sudden bursts of mass transfer rate from the secondary to the white dwarf (the so-called *mass transfer instability model*).

The main difference between the LMXB's and other CV's is the large amount of X-ray emission during the outburst. For the X-ray novae (including Nova Muscae 1991) the L_x/L_{opt} is generally ≥ 100 (at least) that of CV's. This difference is due to the dramatic difference between the physical nature of the compact companion. Whereas for the CV's the material is normally transferred from a main-sequence star to the white dwarf ($D=10^{-2} R_{\odot}$), for the X-ray novae, the material is transferred from the main-sequence star onto a neutron star ($D=10^{-5} R_{\odot}$) or possibly a black hole (McClintock and Remillard, 1986). The outburst in the UV and optical is caused by the reprocessing of the X-ray radiation (produced by the accretion onto the neutron star) which warms up the outer layers of the accretion disk.

Tentative Time-table of Council Sessions and Committee Meetings in 1991

| | |
|-----------------|--------------------------------|
| April 3: | Finance Committee |
| May 6-7: | Users Committee |
| May 13-14: | Scientific Technical Committee |
| May 16-17: | Finance Committee |
| May 28-29: | Observing Programmes Committee |
| June 3-4: | Council |
| November 11-12: | Scientific Technical Committee |
| November 14-15: | Finance Committee |
| November 28-29: | Observing Programmes Committee |
| December: 2-3: | Council |

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 McClintock, J., Remillard, R. 1986, *Ap.J.* **308**, 110.
 Payne-Gaposchkin, C. 1957, *The Galactic Novae*, chapter 10.
 van Paradijs J., Verbunt, F. 1984, in *High Energy Transients in Astrophysics*, ed. S.E. Woosley, p. 49.

Schott Successfully Casts an 8-m Mirror Blank

A test run for the manufacture of mirror blanks in the 8-m class, for use in the world's largest optical telescope, the ESO 16-m equivalent Very Large Telescope (VLT), has been successfully performed at Schott in Mainz, Germany. The test blank had a diameter of 8.6 metres and a surface area of more than 55 m². This is the first time that it has been possible to cast such a large glass-ceramic blank in one piece. To accomplish this impressive feat, Schott has developed a number of new technological procedures.

During the next years, Schott will produce the four mirror blanks needed for the VLT. Each of them will have a final diameter of 8.2 metres and be unusually thin, only 177 mm, in order to be so flexible that their surface form can be easily controlled and maintained in optimal shape by means of an active optics system. This technique has already been successfully installed in the ESO 3.5-m New Technology Telescope for which the mirror blank was also produced by Schott. The editor



The first 8.6-m mirror blank at Schott, shortly after the molten glass was poured into the rotating form (Photo: Schott).