ing phase of aspherizing was finished in January and figuring is now proceeding (fig. 3). Acceptance tests will be carried out this spring.

Electronics and Software

The design work is complete. All major rack units have been manufactured and are currently being tested and installed. Only the telescope console requires further work but will be ready for the final installation in Chile. Preparation of the cables is now complete and the running of the telescope cables is expected to be finished by the end of March 1979.

The software is currently being written and all software necessary to implement the servoloops and to move the telescope will be ready for the tests this spring.

Time Schedule

It is foreseen that tests in Geneva will end in June and the telescope will thereafter be shipped to La Silla. Erection and installation is planned for the end of the year with a considerable part of the auxiliary mechanics having been installed by ESO-Chile during the summer of 1979. Optical alignment and tests will take place early in 1980 and regular operation could start around April 1980.

Probable Optical Identification of LMC X-2

During the last year enormous progress has been achieved in the optical identification of X-ray sources. With the X-ray satellites SAS-3 and HEAO-1 positions with an accuracy of 10″ have been determined, and even more precise results will be obtained with the recently launched Einstein-Observatory (HEAO-B).

Accordingly, astronomers have been pointing the "big" telescopes of the 3–5 m class towards the unidentified X-ray sources and in many cases only a few faint stars remain to be investigated as possible optical counterparts.

Accurate positions for the X-ray sources in the Large Magellanic Cloud (LMC) have recently been measured by Johnston *et. al.* (1978, *Astrophys. J.*, L 59) with HEAO-1. So far, only LMC X-4 has been optically identified (cf. *Messenger* No. 9, p. 4). Two early-type stars, R 148 and a 17-mag B star, have been proposed earlier to be the optical counterparts for LMC X-1 and LMC X-3, respectively, from the less precise positions obtained from the UHURU and COPERNICUS satellites. The recent HEAO-1 results confirm their association with the corresponding X-ray sources.

Thus, we are left with LMC X-2, the second of the bright X-ray emitters in the LMC. Shortly after its discovery the B3 supergiant R 96 was proposed as the most likely counterpart. Since then various astronomers, including the author, have searched for ellipsoidal variability as seen in most massive X-ray binaries. However, HEAO-1 now tells us to forget about R 96 as the optical counterpart of LMC X-2. The new error box only includes a few inconspicuous stars fainter than about 18 mag. Fortunately, several ESO Schmidt plates in the U, B and V bands, covering the LMC X-2 field, were available in Geneva.

As can be readily seen from figures 1 and 2 the star marked E appears quite faint in the visual; on the ultraviolet plate, however, it looks rather conspicuous. Inspection of several U-plates taken a few weeks apart also suggest that star E is slightly variable.

In January the author was scheduled on the 3.6 m telescope equipped with the Image Dissector Scanner (IDS). In collaboration with ESO astronomers Drs. J. Lub, H. Pedersen, J. P. Swings and M. Tarenghi several spectra could be secured, which turned out to be not an easy task as the nearby star just to the east of star E had to be excluded. Integration times of two hours were necessary to obtain a reasonable signal-to-noise ratio. However, our efforts were rewarded as the spectra revealed the presence of Hα, He II λ 4686 and possibly C III-N III λλ 4640-4650 emission lines, the hallmarks of optical counterparts of X-ray binaries!

The Nature of LMC X-2

The faintness of star E ($V \approx 18.5$) rules out a massive X-ray binary system with an OB giant or supergiant optical primary as we observe for LMC X-4.

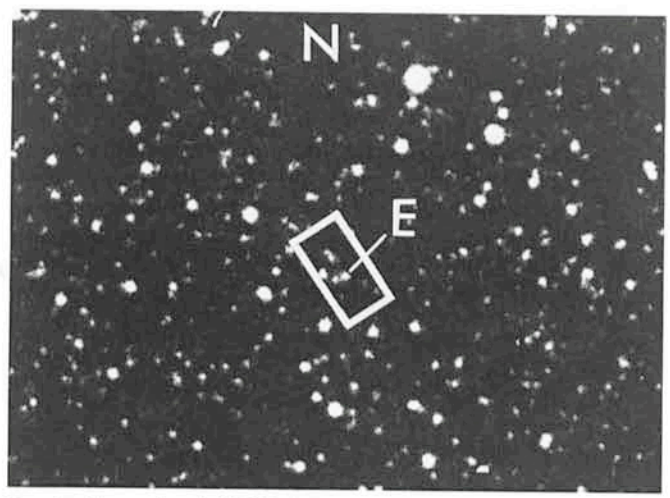

Fig. 1: *The refined HEAO-1 error box (24″ x 36″) for LMC X-2 superimposed on a print of a visual (V-band) ESO Schmidt plate. Star E is the proposed optical counterpart.*

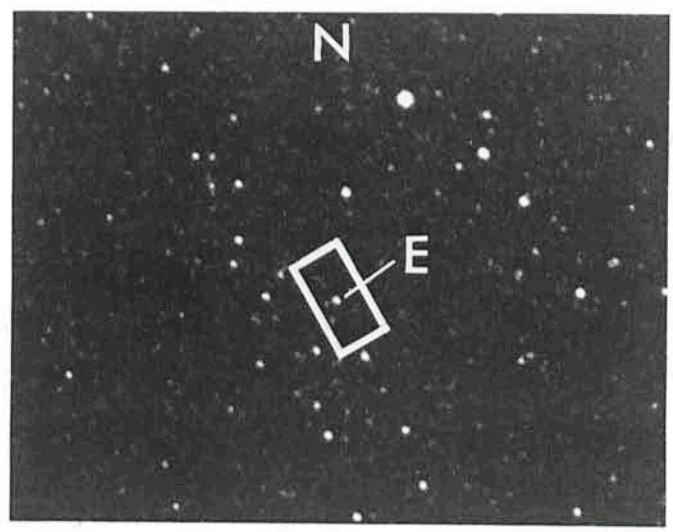

Fig. 2: *Print of an ultraviolet (U-band) ESO Schmidt plate.*

The deduced ratio of X-ray to optical luminosity L_x/L_{opt} of the order of 500 and an absolute visual magnitude M_V of about 0 corresponding to a distance modulus m-M = 18.5 for the LMC appears to be rather typical for a group of X-ray sources with low-mass companions. Sco X-1 is a well-known example, and most of the bright galactic bulge sources are thought to belong to this group. Their spectra are dominated by a strong ultraviolet continuum and the presence of the same emission lines we find in star E. Their similar appearance can be readily understood taking into account that their optical emission is largely a product of the intense X-ray flux interacting with a normal stellar atmosphere or matter surrounding a close binary system.

M. Pakull

Messier 8 = NGC 6523—the Lagoon Nebula

This photograph of one of the most beautiful nebulae in the Milky Way was obtained in the prime focus of the 3.6 m telescope by Dr. S. Laustsen. The exposure time was 30 min, emulsion IIIa-F through a RG 630 filter. It is one of the twenty 3.6 m photos in a forthcoming new set of slides from ESO. More details will follow in the next issue of the Messenger.