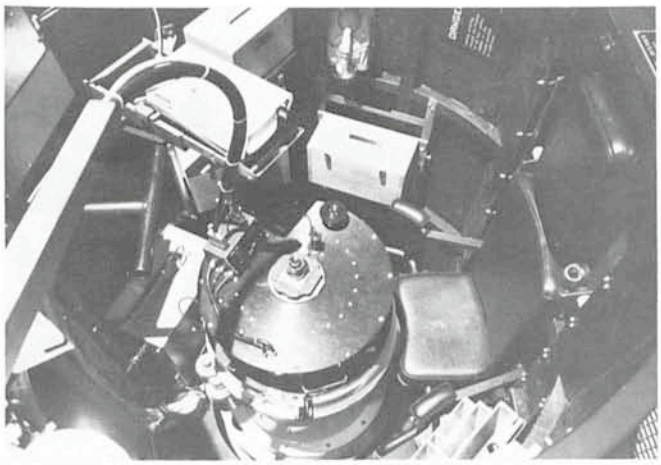
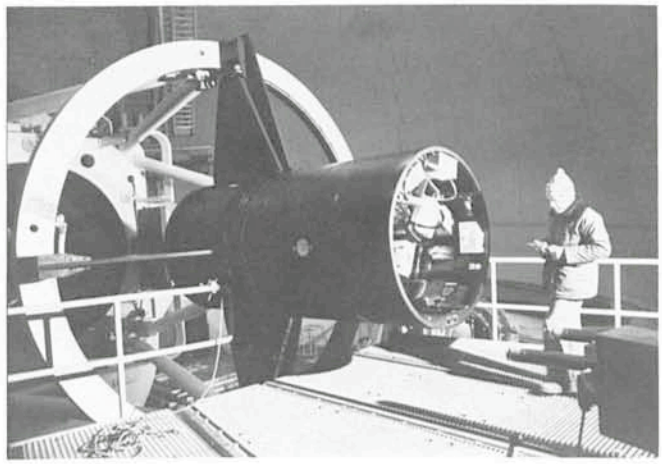


A look down in the prime-focus cage. To the right, the astronomer's chair, from which he guides the telescope during the exposures. In the centre the adaptor with an eyepiece for direct viewing and focussing. Above this the TV-camera (see text).



Preparing observations. The astronomer is about to enter the prime-focus cage, which he rides during the exposure. To facilitate entry, the telescope is brought to horizontal position. The exchange of top-ends, which is a unique feature of the ESO telescope, is also done in this position.

ning struck the dome and caused a lot of damage to the electrical installation and the newly-installed electronics. A few weeks later a part of the building was flooded with oil, and cleaning-up took several days. Never mind, we feel that the photos of the last nights more than compensate the difficulties behind!

Now, however, we should be careful not to give the impression that our work on the telescope is finished. So far, only the prime focus is in operation. A great many improvements and minor jobs still have to be made. But in between, the observations continue. And it is our belief and hope that the percentage of time devoted to astronomy will from now on steadily increase.

S. Laustsen, November 12, 1976

Optical Alignment of 3.6 m Telescope and First Tests

The Optics Group from Geneva has been intensively occupied for the last ten weeks with the alignment and testing of the prime-focus optics for the 3.6 m telescope.

The basic alignment of the optics of the telescope perpendicular to the declination axis was completed about three weeks ago. Since that time, an intensive period of Hartmann testing has fully occupied us.

The measuring facilities at present available on La Silla are not sufficiently accurate to give a final figure for the concentration of geometrical energy in a given diameter. However, there ist clear evidence that the specification of 75 % within a diameter of 0.4 arcsecond should be fulfilled—we think probably by a clear margin. The computer analysis of the plates shows that the basic, lower-order-aberration terms are small; while the workshop tests had already established that the surfaces are very smooth. Turbulence effects in the dome and telescope seem, at present, to be the factors limiting quality and the precision of centring. However, even with the existing plate-measuring facilities, it has been possible to centre the system to within 0.2 arcsecond of tangential coma, in spite of dome turbulence and indifferent external seeing.

External seeing has been mainly poor during the whole test phase, but the first photographs with the telescope have shown very circular images of faint stars on IIIa–J plates with diameters of 1 to $1^1/_2$ arcsecond. With the actual seeing conditions prevailing, the Hartmann tests are at least an order of magnitude more precise than visual or photographic assessments.

As soon as the Hartmann plates have been measured on a more accurate measuring machine in Europe, a complete report of the test results will be published. These results will refer to the naked mirror and to the complete prime-focus system with the Gascoigne plate correctors. The triplet correctors will be available in a few months and will be the subject of a further report.

The Cassegrain-focus alignment and tests should take place about next March.

R. Wilson, October 29, 1976

The Prime-Focus Cage

The first plates have now been taken with the 3.6 m telescope. This was done in the prime-focus cage that allows the astronomer to ride in the front end of the telescope during the observations. In the following we shall explain how the cage was equipped for the first test of the telescope.

In the cage there is room for one astronomer, an adaptor and some auxiliary equipment needed by the astronomer

during the observations. The adaptor may be used either as a camera or as a support for other detectors. The adaptor is placed on a pedestal protruding into the cage from the unit underneath the cage through a hole in the floor of the cage. That unit is supported by the structure of the telescope through the main spiders. The cage itself is supported by additional upper spiders. Due to this double-support structure, only a minimum of vibrations are transmitted to the adaptor from the cage motors or the astronomer.

The cage thus supports only the observing astronomer and the auxiliary equipment. The observer sits in a chair, which is adjustable in height by means of a motor-drive. Furthermore, the whole cage may be rotated in order to provide a maximum of comfort for the astronomer in all positions of the telescope. All necessary control-panels are situated on the wall of the adaptor and within the reach of the astronomer. A TV-monitor displaying a guide-probe image from the adaptor and a handset to control the telescope facilitate manual guiding from the cage. The cage is equipped with intercom, telephone, boxes for storage of plate- and filter-holders, safety belt and a rescue device (rope with friction brake) allowing the astronomer to leave the cage at any moment in case of emergency.

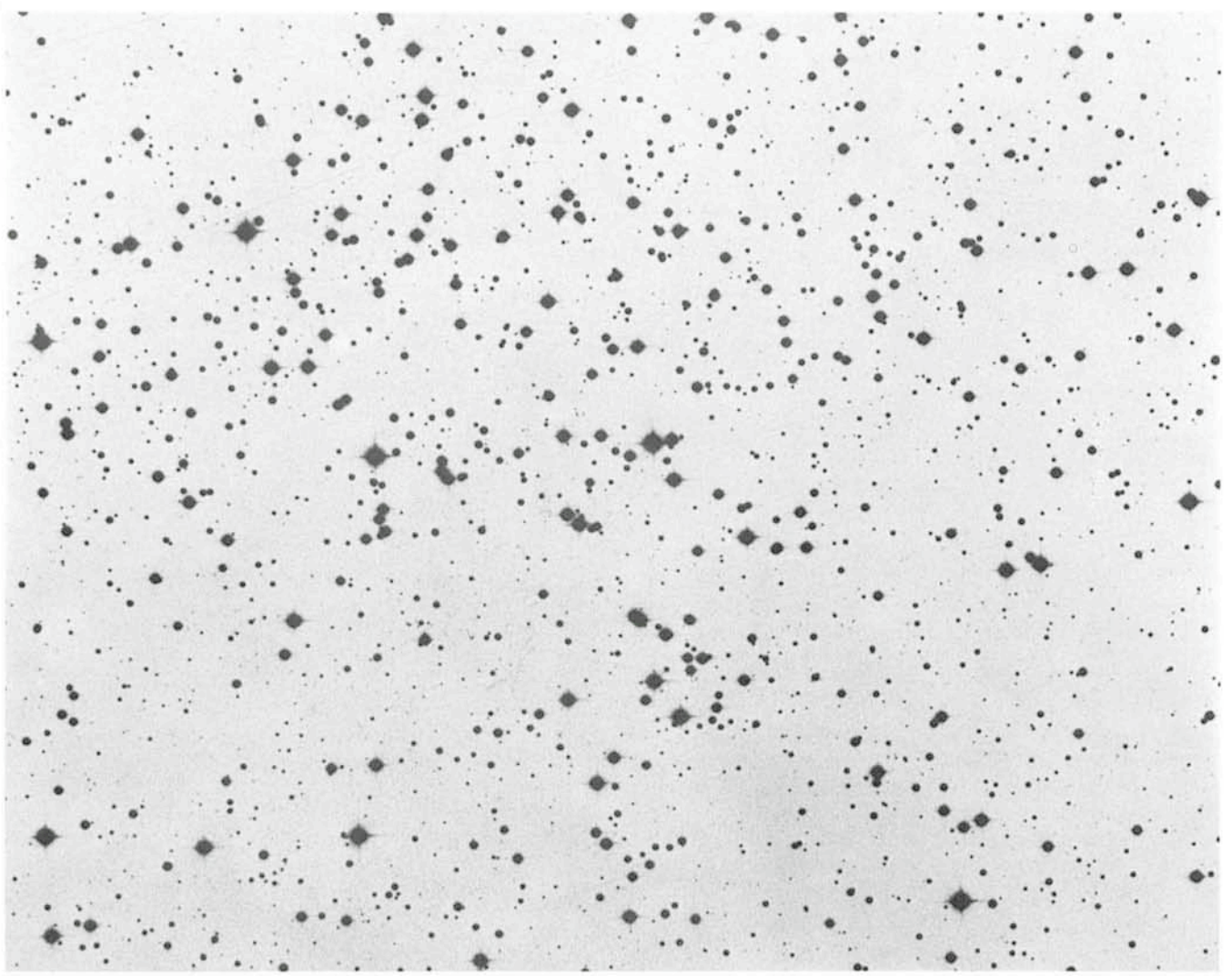
The pedestal supporting the adaptor comes through the floor of the cage and is fixed to the prime-focus unit underneath. The pedestal includes a high-precision motor-actuated focussing drive which may move the whole adaptor (or any other instrument) along the telescope axis. The speed is variable by means of a thyristor controller. The position of the focussing drive is measured by an encoder and is shown on a digital display on the wall of the cage.

The adaptor is seen on the photo. For direct prime-focus photography, the adaptor is mounted together with a support carrying a one-element Gascoigne corrector lens (not shown). The obtainable field is approximately 17 arcminutes when using this corrector lens.

The adaptor is equipped with 6 filter-holders and 6 plate-holders for photographic work. An eyepiece may be mounted on one of the plate-holders. The TV-guide probe has a field of 1 arcminute, which may be placed anywhere along the periphery of a circle with a diameter of 27′ and concentric with the plate field. One of four guide-probe filters may be selected. The TV-camera is equipped with an image intensifier to increase sensitivity.

The adaptor has a shutter that may be remotely controlled from the main console. Since also the TV-guide-probe image may be displayed on the console, it is possible to take exposures with the cage unmanned.

T. Andersen, November 2, 1976



Another photo from the ESO 3.6 metre telescope shows the central part of the old stellar cluster NGC 2477 in the southern constellation Puppis. Observer: Dr. S. Laustsen; exposure time 20 min; emulsion 127–04 (baked in nitrogen); filter RG 630.