Real-time Reduction

As the I/O with the graphic display is routed through a single module, the system can be easily modified to work with other than an IMLAC display. In fact, it is planned to use parts of the image-processing system at the telescope with a Tektronix display for the real-time reduction of data produced by an image dissector scanner.

In its present state the system consists of 97 commands with varying levels of computer sophistication. However, further development has not stopped. New routines are being regularly added with the aim of providing more reduction facilities in those areas of astronomy where imagery is the basic data format.

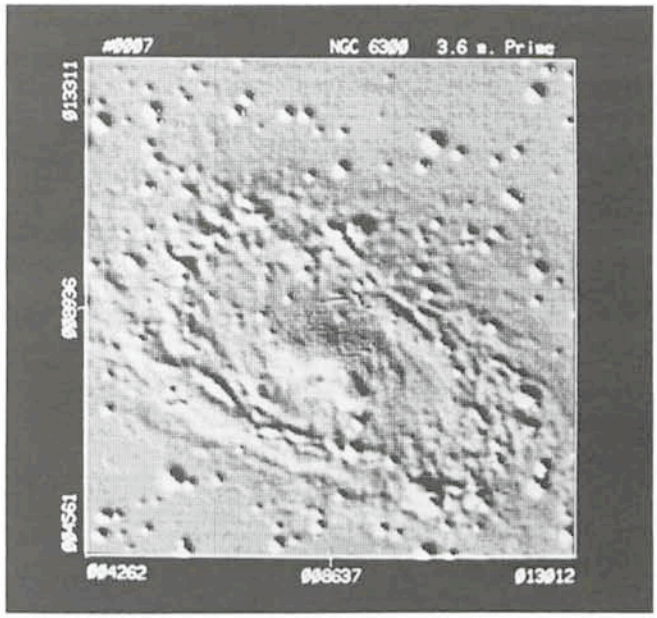

Fig. 7. — *Subtracting a slightly misaligned image from itself produces this. The lower and the higher grey levels show where the slope is the steepest.* ▶

The Large-Field Camera for the 3.6 m Telescope

One of the important features of the ESO 3.6 m telescope is that the optics permit a comparatively large field (about 1°) to be imaged on a photographic plate in the prime focus. This is possible due to the chosen shape of the primary mirror (modified Ritchey-Chrétien) and a triplet corrector in front of the photographic plate. The large-field camera is now ready for shipment to La Silla. It incorporates some unusual features that are not seen at other telescopes and was designed by ESO engineer Sten Milner in Geneva. He gives this information to the future users:

The large-field camera (Fig. 1) was received from the manufacturer in July 1977 and is now undergoing thorough testing at ESO, Geneva, before being shipped to La Silla, at the end of the year. It can be mounted in the Cassegrain focus, but will mainly be used in prime focus as soon as this focus gets equipped with the triplet adapter in mid-1978.

The camera consists of a manually *"quick-connect"* plate holder, a remotely-controlled shutter and a filter box with four filters, either colour or interference filters. The fil-

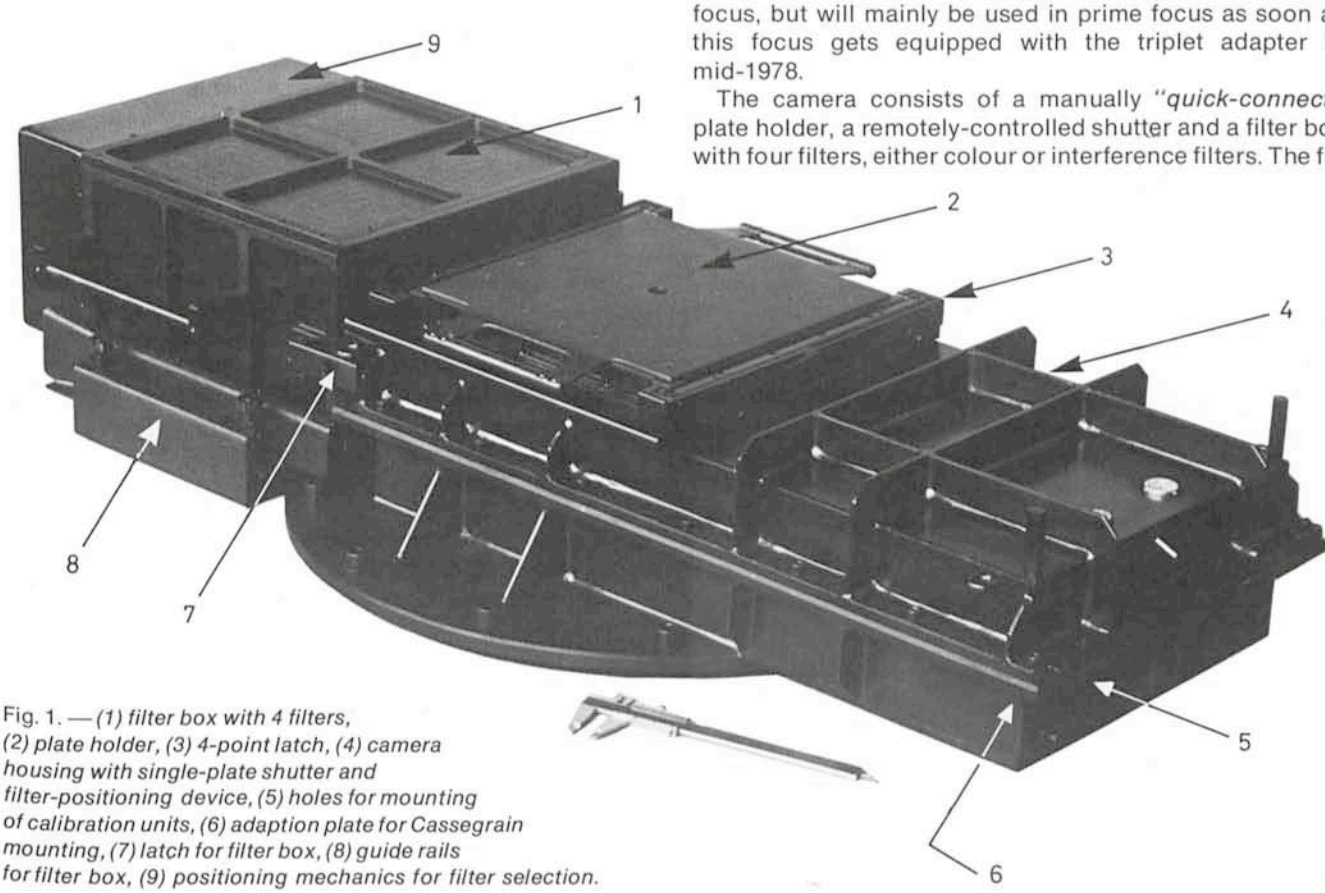

Fig. 1. — *(1) filter box with 4 filters, (2) plate holder, (3) 4-point latch, (4) camera housing with single-plate shutter and filter-positioning device, (5) holes for mounting of calibration units, (6) adaption plate for Cassegrain mounting, (7) latch for filter box, (8) guide rails for filter box, (9) positioning mechanics for filter selection.*

ters can be remotely selected and positioned in front of the photographic plate. It has a maximum useful aperture of 220 x 220 mm. The plates have the dimensions: 240 x 240 x 2.3 mm, and the colour filters 230 x 230 x 2 mm or 230 x 230 x 10 mm if interference filters are used.

In addition to this unit will be constructed a *remotely-controlled* plate-changer containing up to eight photographic plates of 240 x 240 x 1 mm, or film sheets of 240 x 240 x 0.2 mm, which replaces the single-plate holder. The plate or film sheet is held to the back-up plate by a low vaccum. The introduction of the plate changer reduces the dead time and manipulation effort on the telescope, since the time to change a plate and filter will be only 20 sec, and this can be made in any telescope position. The eight plates are contained in a light-weight cassette which is connected easily to the general plate-changer housing when the telescope is in its horizontal position. The plates can be marked by an 8-digit alphanumeric LED unit, placed in the plate changer. This plate changer is actually in its final design stage and will be available in mid-1978.

A Dark Cloud in the Centre of Elliptical Galaxy NGC 3311

Professor Per Olof Lindblad spent the first half of 1977 with the ESO Scientific Group in Geneva. During this time he and Dr. M. Disney initiated a study of the structure of galaxies and together with Dr. S. Laustsen high-resolution photographic plates were obtained with the 3.6 m telescope. In this note Professor Lindblad discusses one of the galaxies and its companions.

The cluster of galaxies Abell 1060 is a fairly rich group of comparatively bright galaxies in the Hydra constellation at $\alpha = 10^h\ 34^m$ and $\delta = -27°\ 16'$. Close to the centre of the cluster we find two 12th-magnitude elliptical galaxies, NGC 3309 and 3311, separated by about 1.6, 3311 lying to the east of 3309.

The average radial velocity of the cluster is 3233 km/s relative to our local group of galaxies. Assuming a Hubble constant of 55 km s^{-1} Mpc^{-1}, we may thus derive a distance of 59 Mpc. This gives an apparent separation of the two elliptical galaxies of 27 kpc. The real separation in space may of course be larger, if they are not at exactly the same distance. The velocity difference between the two galaxies amounts to about 300 km/s.

According to photoelectric measurements by S. van den Bergh (*Astrophys. Journ.* **212,** 317, 1977) and by M. Disney,

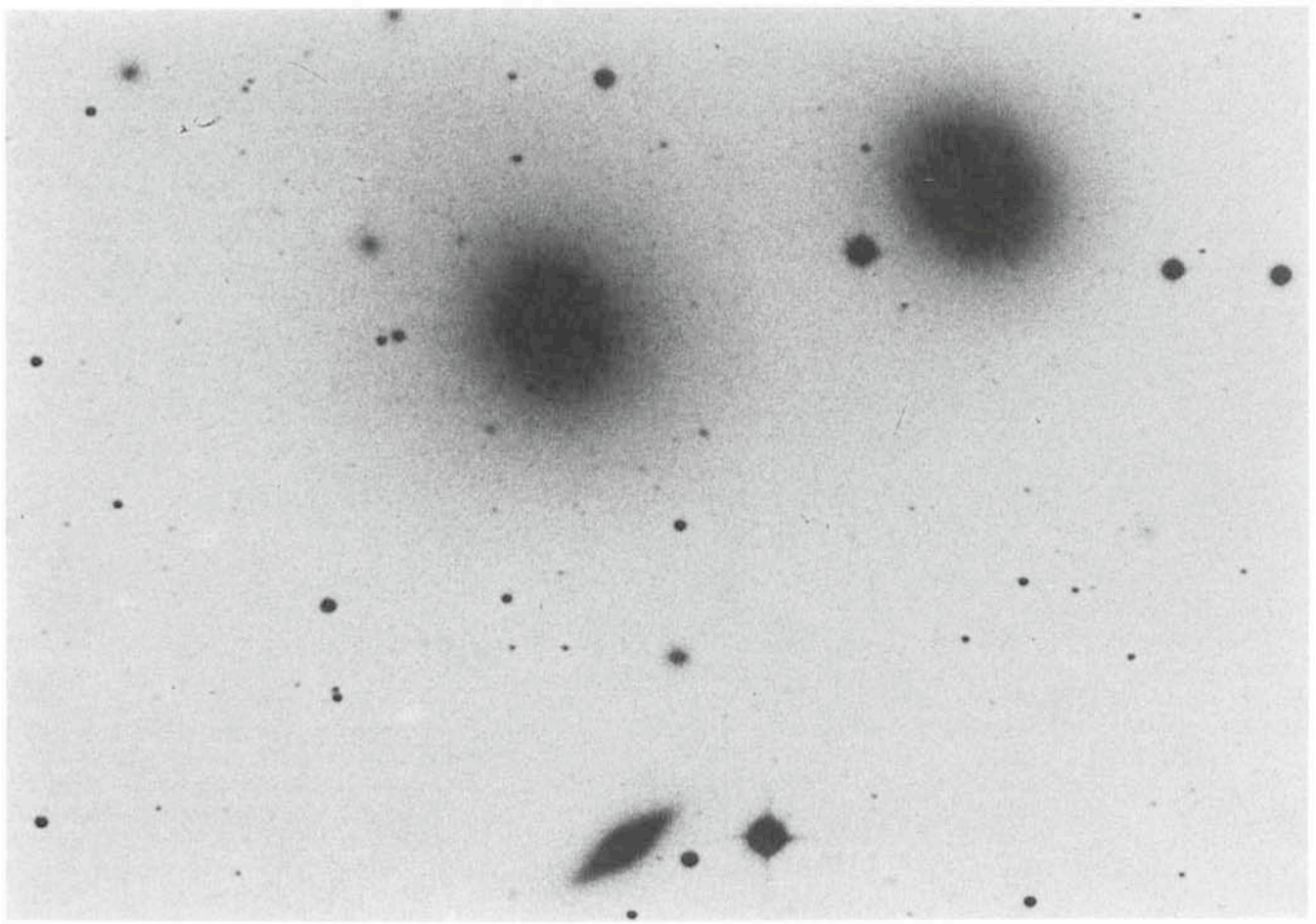

Fig. 1. — *The centre of Abell 1060 cluster of galaxies. To the upper right elliptical galaxy NGC 3309 and in the centre NGC 3311. The scale is given by the distance between the centres of NGC 3309 and 3311 which is about 100 arcseconds. The diffuse objects surrounding 3311 are globular clusters (see text). ESO 3.6 m telescope, 90 min. IIIa-J + GG 385.*