



Printing High-contrast Astronomical Plates

Most photographic emulsions currently used in astronomy are rather contrasty, for instance IIIa-J and IIIa-F (formerly 127-04). This is a great advantage for reaching faint objects, but it turns into a problem when prints are made from the original plate. Photographic paper can only hold a limited range of densities and the prints therefore tend to become very unsatisfactory; either the high densities show no detail or the faint structures are lost in the background.

One way to overcome this problem is to introduce a photographic mask in the process. During the past months, ESO photographers B. Dumoulin and R. Saxby from the Sky Atlas Laboratory in Geneva have been experimenting with such masks in order to make better prints of the plates that are obtained on La Silla, in particular those from the 3.6 m telescope.

We here show one example of the gain by using the masking technique. It is quite obvious that one sees more detail in the right half of the photo of southern spiral galaxy NGC

5236, from the 3.6 m telescope (60 min, IIIa-J + GG385), than in the left. Whereas the left half is the best possible direct print (optimizing the exposure time and the paper grade), the right was made in the following way:

The original plate was placed in the enlarger and projected onto a film to a density of about 1.6 D when developed. The film was then put back on the enlarger table in exactly the same position (this is not easy) and the plate was printed on a paper, through the film mask. The film was then removed and a short, direct exposure was made. In this way it is possible to have the central parts of the galaxy well exposed (through the mask) without overexposing the background (blocked by the mask).

The whole operation (including test prints, etc.) takes less than one hour, thanks to the two automatic development machines in the Sky Atlas Laboratory, one for the film (same as used for the sky atlases) and another for the paper prints.