

Development was carried out in:

AGFA-GEVAERT Rodinal 1+75 and 1+50, Atomal.

ADOX E 24.

ILFORD Microphen.

KODAK D 76 and Microdol-X.

TETENAL Neofin blue and Ultrafin liquid (diluted 1+15 and 1+10).

In addition tests were made on all films with two developers which are at present much under discussion: BAUMANN (in Germany: G. Janssen & Cie., Cologne) Diafine and Acufine.

How the tests were made

Many readers will be interested to know how the tests were carried out. Here, then, is a brief account of the method of test and the equipment employed:

Camera: Leica M2 with 50 mm f/2 Summicron, invariably stopped down to f/8. Exposures varied between $\frac{1}{4}$ and $\frac{1}{60}$ th sec., thus eliminating any possibility of error due to reciprocity failure.

The test object comprised a fairly large grey surface (18% reflection), a neutral wedge, two Siemens stars of different sizes, six sets of parallel lines (vertical and horizontal), a currency note (see illustration), two very clean and clearly printed postage stamps, and identification plates for type and speed of film.

Illumination consisted of a number of 500 watt Nitraphot B lamps in aluminium reflectors. To eliminate voltage fluctuations the lamps were connected in series with a variable transformer and voltage control (Multavi 5, Class 1.5). Adjustment of the illumination intensity on the test object was effected by varying the distance of the lamps. This enabled the colour temperature to be maintained very closely constant for all exposures.

Exposure determination: Gossen Labor-Luxmeter and 8 selenium cell and CdS photoresistor exposure meters which have proved their reliability in practice. Gossen Sixtino, two models of the Sixtomat $\times 3$, Lunasix $\times 3$. Three models of the Leicameter MR. A Metrawatt "Metrastar". The method of exposure determination was to take reflected light measurements on the grey surface, and (with the exception of the Leicameter MR) incident

light measurements. From the very closely agreeing indications of the three meters (maximum difference $\pm \frac{2}{3}$ stop) a standard was evolved which was checked again and again in the course of the work.

The distance of the camera from the test object was 1.5 metres. The camera and test object were mounted free from vibration optical bench fashion on sturdy brackets of special construction. To make assurance doubly sure, the cable of the pneumatic release with which the Leica was operated was supported in two places to ensure that no vibration could be transmitted. There was no traffic moving at the time the work was carried out.

These precautions, which may perhaps seem over-elaborate, served only one purpose: to ensure that the tests were as free as possible from error while employing methods which are within the resources of amateur and professional.

Using the above equipment, five stepped exposures were given for each film-developer combination (not including preliminary test exposure strips, etc.).

Development and subsequent treatment

The strips of film were developed in a Jobo Universal 16/160 D tank. For the first 30 secs. the tank was left without agitation, then inverted every $\frac{1}{2}$ minute, in accordance with the instructions for use. (An exception were Diafine and Acufine, for which there are special agitation instructions). Ten seconds before the expiry of the development time the spiral was removed from the tank and rinsed in water for the remainder of the time. The film was then fixed for three minutes in Tetenal Superfix, washed and dried without heat. No stop bath was employed. All times were measured with a stop watch.

In order to eliminate any possibility of errors due to inaccurate temperature, every precaution was taken. Throughout the work the temperature of the room was electrically maintained at 20°C within $\pm 1^{\circ}\text{C}$. All prepared solutions (as also the tanks in the intervals between inversion) were kept standing in a tank of water which was maintained at 20°C with the help of a precision electronic temperature control (Hesto-accuracy $\pm 0.05^{\circ}\text{C}$). The temperature of the actual developing solution was further continually checked with a $\frac{1}{10}$ th mercury thermometer and maintained at