the Harvard Standard Regions C3, C4, and C5.¹ The existence of a systematic error is confirmed by the present investigation, based on 29 polar comparison plates made with the 8-inch Ross and 16-inch Metcalf cameras at the Oak Ridge station of Harvard Observatory. The suggested corrections to the published magnitudes of Harvard Standard Region C5 amount to -0.21 for $m < 8.0$, to -0.34 for $8.0 < m < 10.0$, and to -0.16 for $m > 10.0$.

The existence of a relative color equation is established between the photo-red system of *Harvard Annals* 89, No. 5 and No. 8, 1C special emulsion, ciné-red filter, and that of the present investigation, 103a-E emulsion, ciné-red filter. It is recommended that, in future work with 103a-E plates and a ciné-red filter, the standard magnitudes of *Harvard Annals* 89, No. 8 be corrected according to the formula

$$\text{Hpr}_{103a-E} = \text{Hpr}_{1C} - 0.10 (\text{Ipg} - \text{Hpr}_{1C}).$$

The newly derived photo-red magnitudes of the standard stars for Harvard Standard Region C5 have an average probable error of less than ± 0.02 magnitude.

1. *Ann. Harvard Col. Obs.* 89, No. 8, 1937.

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Duncan, John C. Photographs of two great southern galaxies.

The extragalactic nebulae NGC 55 and NGC 253, in the constellation Sculptor, were among the objects photographed by the author with the 100-inch telescope at Mount Wilson in the summer of 1945. Lantern slides, made from negatives obtained on September 2, 1945, illustrate the paper. Slides from early drawings by the Herschels are also presented.

NGC 55, in galactic latitude -77° , is $3'$ wide and $29'$ long at its greatest extent. Though it has been classified as a spiral, it here appears as an irregular galaxy. Considerable obscuration is noticeable, especially in the brighter, preceding part.

NGC 253, two degrees from the south galactic pole, has been assigned magnitude 7.0 by Shapley and Miss Ames, indicating that it is the second-brightest spiral nebula in the sky. It is a beautiful right-handed spiral $5' \times 24'$ in dimensions. On the new photographs, obscuration is conspicuous, especially on the north-preceding side; there is a faint general veil of amorphous nebulosity suggesting the effect of multitudes of

faint stars; numerous bright stars are so arranged as evidently to belong to the nebula; and there are several almost star-like objects that have a nebulous appearance. One of these, exhibited in an enlarged slide, is $10''$ in diameter and is crossed by a central bright bar. (In the accompanying Plate it appears as a star, 65 mm from the right-hand edge and 40 mm from the bottom.) In the field surrounding the great nebula are numerous apparently small, undoubtedly more distant, extragalactic nebulae.

The author is indebted to Dr. Harlow Shapley for determining the magnitudes of some of the stars in and around NGC 253 by comparing the plate of September 2 with a negative of the same region made with the Bruce telescope at Bloemfontein. Dr. Shapley finds that the 100-inch plate (which had 50 minutes' exposure) shows stars to approximate magnitude 19.5 on the Harvard scale, and that the brightest stars that can be confidently attributed to the nebula are of magnitude 17.5. The corresponding distance-modulus is 23.8 magnitudes, giving a distance of the nebula of 1,875,000 light-years, a diameter of about 13,000 light-years, and an absolute magnitude -16.8 .

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Gaposchkin, Sergei. UX Monocerotis, an eclipsing system with thick atmosphere.

The little-known eclipsing system UX Monocerotis has been studied on 32 spectrograms obtained at the McDonald Observatory, and on 1374 photographic patrol plates of the Harvard Observatory.

Both components, A7p and G2p, are visible spectroscopically (two orbital velocities), and photometrically (two minima). The period is 5.9 days.

A combination of the spectroscopic elements, $(m_1 + m_2) \sin^3 i = 2.38 m_\odot$ and $(a_1 + a_2) \sin i = 18.3 r_\odot$, with the photometric elements $r_A = 0.08$, $r_G = 0.28$, $i = 88^\circ.7$, reveals sizes of 1.6 and 5.2 times that of the sun, and masses of 1.1 and 1.3 that of the sun respectively, for the A7 and G2 components.

The extraordinary features of the system consist in:

1. The doubled hydrogen and Ca II lines show at the elongations a relative velocity twice as large as that shown by the rest of the lines.
2. At secondary minimum, the single hydrogen and calcium lines are very wide, correspond-

Plate I. NGC 55 Sculptoris, photographed with 100-inch telescope by Duncan, 1945 September 2.
Eastman 103a-O plate, exposure 50 minutes. 1 mm = 13".3.

Plate II. Spiral Nebula NGC 253 Sculptoris, photographed with 100-inch telescope by Duncan, 1945 September 2.
Eastman 103a-O plate, exposure 50 minutes. 1 mm = 11".2.