THE MESSENGER

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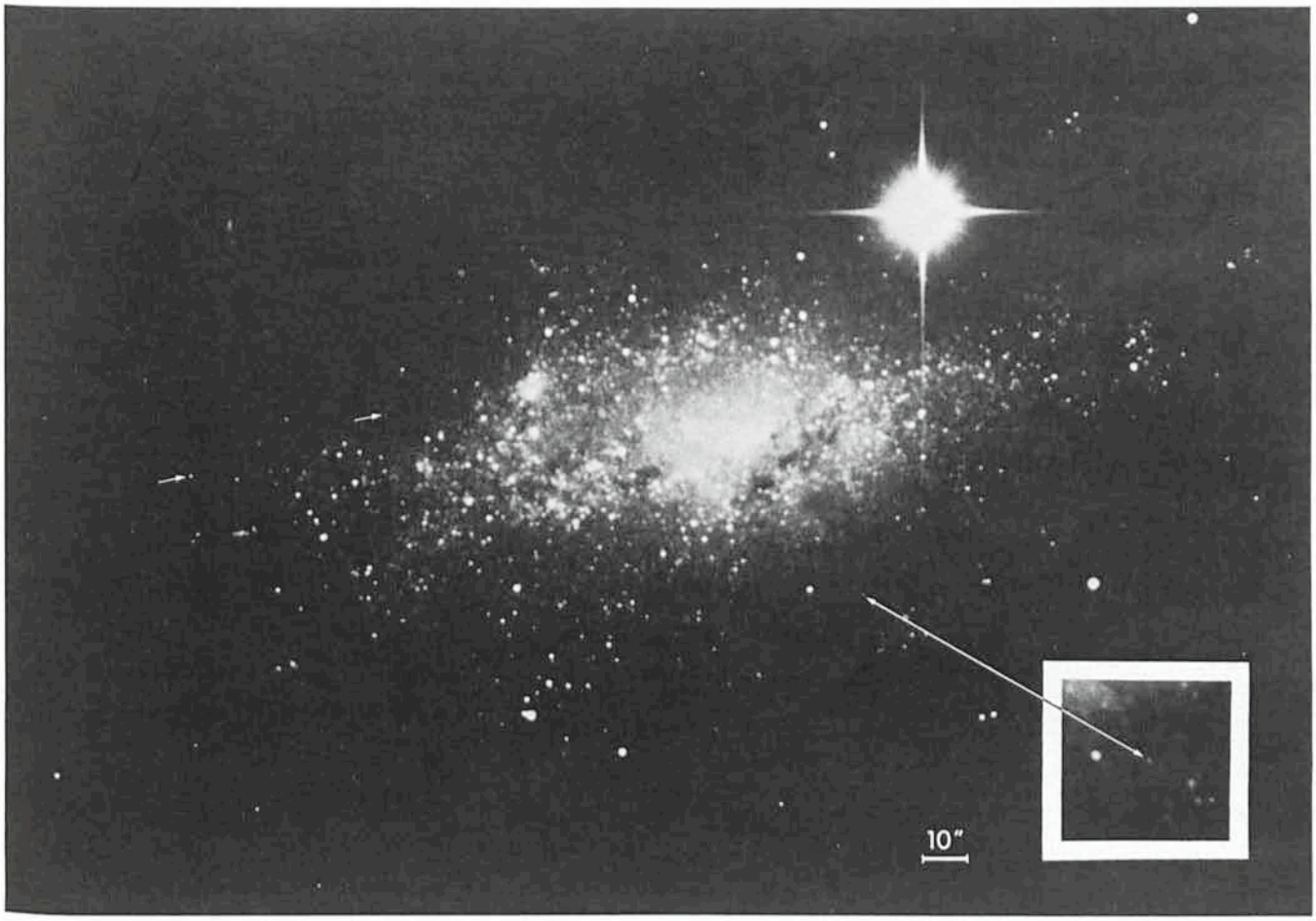
# Variable Stars in IC 5152




*This 60-minute exposure on blue-sensitive IIIa-J emulsion of the galaxy IC 5152 was obtained at the prime focus of the ESO 3.6 m telescope under excellent seeing conditions during the early morning of June 12, 1977. The galaxy is highly resolved into stars and a comparison of this plate with several others has revealed three variable stars (indicated with arrows). One of the variables is also shown (in the insert) on a plate from July 8, 1977. Although the seeing on July 8 was clearly inferior to that on June 12, it is quite obvious that the star is brighter on the later date.*

*The bright star northwest of IC 5152 is HD 209142 of 8th magnitude.*

*One of the best methods to determine the distance to a (nearby) galaxy is to measure the periods and magnitudes of the so-called cepheids in the galaxy. The cepheids are variable stars and they are found by comparing photographic plates of the galaxy from different nights. Drs. Svend Laustsen and Gustav Tammann from the Scientific Group at ESO/Geneva have just analysed such plates of the IC 5152 galaxy:*

The southern dwarf irregular galaxy IC 5152 has so far not drawn much attention, although an excellent photograph by D. S. Evans (Photographic Atlas of Southern Galaxies, 1957) showed it to be highly resolved and therefore relatively nearby. In fact its corrected radial velocity is only $+5 \pm 30$ km $s^{-1}$, and since no field galaxy is known with such a small velocity it was concluded that IC 5152 must be a member of the Local Group (A. Yahil, G.A. Tammann, A. Sandage, 1977, *Ap. J.* **217,** 903).

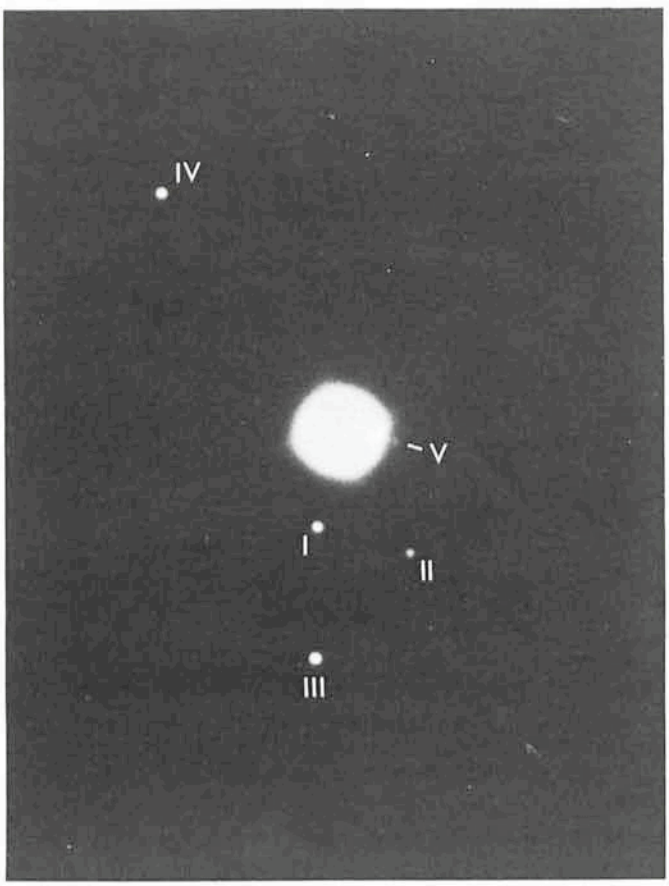
The first plates of IC 5152 taken in different colours with the 3.6 m telescope on La Silla not only show many blue and very red supergiant stars and a few extended H II regions—which were already observed by J.L. Sérsic (Atlas de Galaxias Australes, 1968)—but have also led to the discovery of the first three variable stars in this system. No period is known yet for these variables, but their colour, amplitude and the time scale of their variability make them good candidates for being cepheids.

A very rough estimate of the distance of IC 5152 gives 1.5 Mpc. At this distance its absolute magnitude is about $-14^m$ to $-15^m$, which makes it comparable in size to the well-known Local Group dwarf IC 1613. The distance of 1.5 Mpc suggests that the Local Group is somewhat larger than the conventionally adopted radius of 1 Mpc.

Further work on IC 5152 is planned. It is hoped that this will lead to a more reliable distance determination, which will not only help to define the size of the Local Group, but also provide an important additional calibrator of the extragalactic distance scale.

# The Satellites of Uranus and Neptune: A New Astrometric Programme

*Observations are now being obtained at La Silla of the outer planets Neptune and Uranus. In order to determine exact positions of the satellites of these two giant planets, Drs. G. Ratier and O. Calame of the Pic-du-Midi Observatory in the French Pyrenees have recently used the ESO 1.5 m telescope. They give some preliminary information about their important programme:*




Since the discovery (on 10 March 1977) of a "ring system" around Uranus, the interest in the satellites of the outer planets has undergone a revival.

Prior to that date, it was well known that astrometric observations of the faintest satellites of these planets were suffering from large inaccuracies which lead to a poor knowledge of their orbits, i. e. the predicted positions were not always in good agreement with those actually observed. Numerical and classical theories were not working satisfactorily on a long-time basis. For this reason a cooperative programme was initiated in 1976 between CERGA (Grasse near Nice) and the Pic-du-Midi Observatory, in France, in order to obtain new observations of these objects. Good seeing conditions are, of course, required for the success of the programme. For Uranus and Neptune, it appeared that the best image quality would be obtained on La Silla, due to the negative declination of these two planets at the present time.

A two-step reduction technique is necessary to determine the coordinates (Right Ascension and Declination) of

*A 20-sec exposure was recently obtained of Uranus and its five satellites by ESO astronomer W. Wamsteker, at the prime focus of the 3.6 m telescope. All satellites are well visible: I Ariel ($14^m4$), II Umbriel ($15^m3$), III Titania ($14^m0$), IV Oberon ($14^m2$) and V Miranda ($16^m5$), the one closest to Uranus. The magnitude of Uranus is $5^m7$ and the size of the disc 1.9 arcsecond (much larger on the photo because of the light diffusion on the photographic emulsion). The diameters of the satellites are poorly known, but are probably of the order of 1,000–2,000 km for I to IV and 500 km for V.*