istence of a physical group of stars. We still need additional information about the luminosity classes to resolve this problem. We should also like to add that we have determined m_r and m_{ir} of 274 stars in this field by means of photographic observations at Observatoire de Haute-Provence.

Future Work

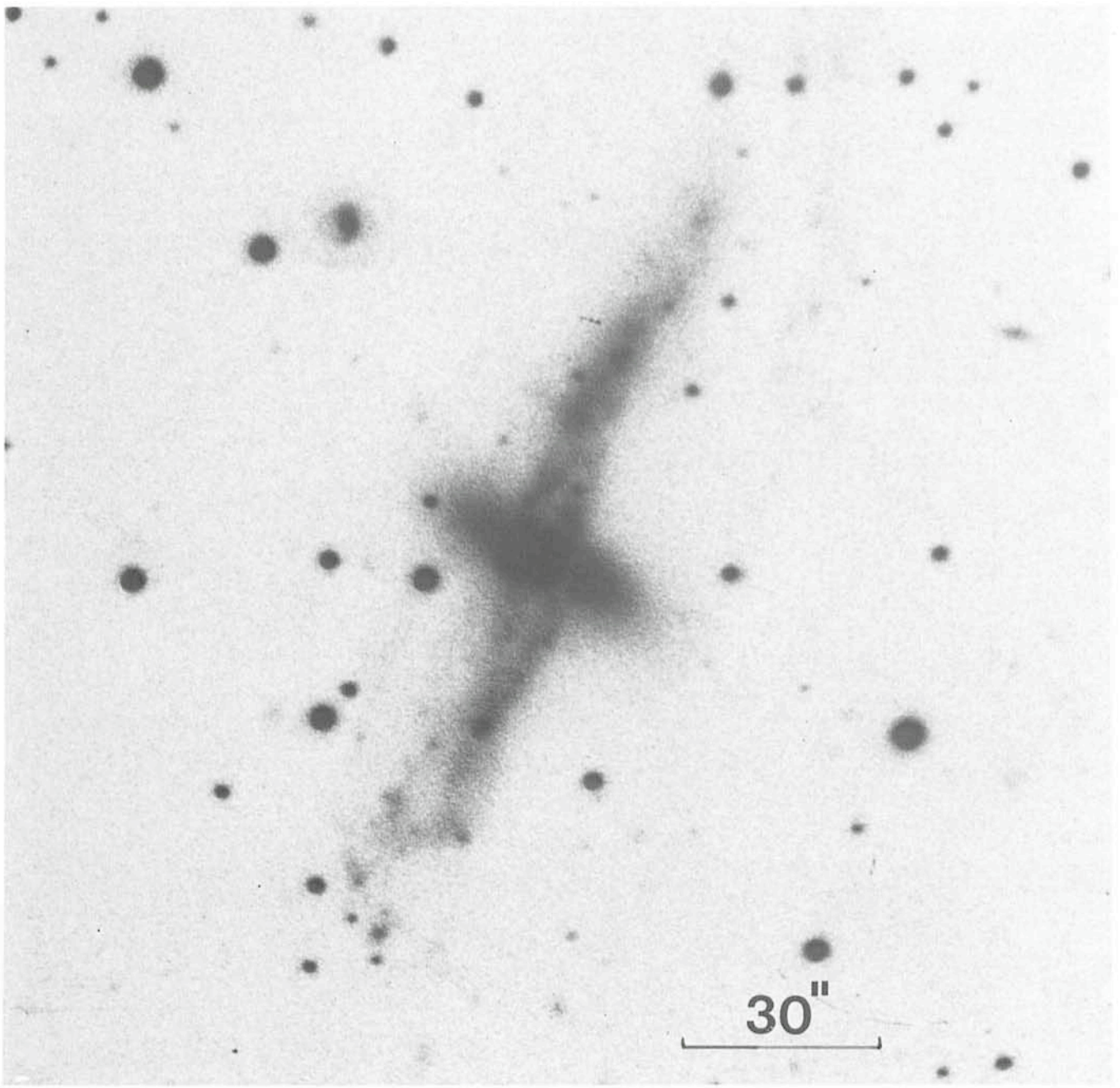
There is obviously much work still to be done in order to terminate the present study. First of all, we expect to determine the types of the 268 variable stars by means of further plates from the ESO Schmidt and to construct the light curves. Secondly, we should like to confirm (or disprove) the variability of the 150 suspected candidates.

We also intend to study spectroscopically the above-mentioned three diffuse objects and to measure the radial velocities and UBVR magnitudes of the 21 stars with large proper motions. We finally expect to continue the photoelectric photometry of many other stars in the direction of the bright cloud B in Sagittarius.

We should like to thank Prof. L. Woltjer and Dr. A.B. Muller for their encouragement and the continued interest they have shown in our work.

The Peculiar Galaxy NGC 4650 A

In the western part of the constellation Centaurus lies a spectacular chain of galaxies. Some of the members are elliptical, others are spiral, and one is very peculiar. Its name is NGC 4650 A and the integrated magnitude is about 14^m. The



galaxy chain is shown in Sersic's atlas *Galaxias Australes* and he also made a preliminary spectroscopic study (*Astrophys. Space Science*, 1972, **19,** 387).

Improved photographic and spectroscopic observations have now been obtained with the 3.6 m telescope by ESO astronomers S. Laustsen (now at the Aarhus Observatory in Denmark) and R. M. West. The figure shows a 90-minute exposure in prime focus on IIIa-J emulsion behind a GG 385 filter. It appears that the galaxy consists of a central elliptical component, surrounded by a disk (?), perpendicular to the major axis of the ellipsoid. A heavy dust band is seen where the disk component shrouds the light from the elliptical. Many knots are in the disk, north and south of the central region.

The spectra show that the knots are low-excitation H II regions (ionized hydrogen) and that the disk apparently is rotating. The northernmost knots have velocities of about + 120 km s^{-1} and the southern –90 km s^{-1}, relative to the centrum. The spectrum of the elliptical component is of late stellar type, indicating that it consists mainly of stars. Contrarily most of the disk is made of gas and dust.

The distance to NGC 4650 A is about 50 Mpc and its N-S diameter is almost 40 kpc (projected).

There are a number of other galaxies that are morphologically somewhat similar to NGC 4650 A, although the individual shapes may vary significantly. Among these are several radio sources, like NGC 5128 (Cen A) and Cyg. A. Two Italian astronomers, Drs. F. Bertola and G. Galletta from the Asiago Observatory have recently begun a detailed study of these galaxies. They believe that they are all members of the same class of galaxies that has a prolate stellar structure cut equatorially by a gaseous plane. The dynamical behaviour of these systems is complicated and is not yet understood.

The Story of Minor Planet (2100) RA-SHALOM

The number of known Apollo-type minor planets has risen dramatically during the past years, mainly as a result of the great observational efforts by Californian astronomers. Two of these stand out as the discoverers of particularly interesting objects: Eleanor F. Helin and Charles T. Kowal of the California Institute of Technology in Pasadena. Working with the 46 cm and 122 cm (48 inch) Schmidt telescopes on the Palomar mountain, they regularly find new, peculiar minor planets.

Three years ago, Mrs. Helin discovered the first minor planet with an orbit *smaller* than that of the Earth. The planet, 1976 AA, was named after an Egyptian sun-god, ATEN. Soon after, yet another planet was found to have a similar orbit, lying mostly inside the Earth's orbit (1976 UA, cf. *Messenger* No. 7, p. 5). And now, in September 1978, Mrs. Helin found a third, 1978 RA. It has been proposed that these three should be called "Aten"-asteroids to distinguish them from the other Apollo-asteroids which, although they cross the orbit of the Earth, still have orbital periods of more than one year.

Fig. 1: *The discovery trail of RA-SHALOM, observed with the Palomar 46 cm Schmidt telescope on September 10, 1978.*

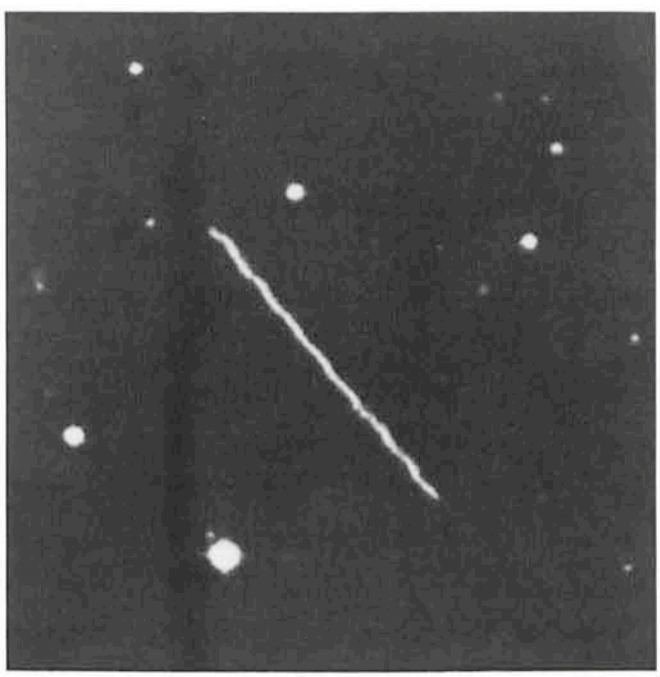


Fig. 2: *A follow-up observation of RA-SHALOM with the ESO Schmidt telescope on September 22, 1978. The trail is somewhat wiggly due to (insufficient) guiding. Exposure 30 min under very bad seeing conditions.*

1978 RA was discovered on September 10, 1978 with the Palomar 46 cm Schmidt telescope, on a IIa-D film, exposed for 20 minutes (see the photo). Further observations were made during the following nights and it soon became clear that the orbit was unusual. Then, on September 14, Dr. J. G. Williams, from the Jet Propulsion Laboratory, also in