on June 20–22, 1978. About 40 European astronomers active in infrared astronomy will be invited in order to discuss the scientific framework, the research planning and the instrumental development which ESO should foster in this area.

The programme of the workshop includes:

- Review talks on astrophysical problems where infrared observations are of particular value,
- Review talks on the present status of various instrumental techniques in the field of IR spectroscopy and photometry,
- Reports on IR space project and on other European plans.

More detailed information may be obtained from P. Salinari, ESO, c/o CERN, CH–1211 Geneva 23, Switzerland.

The ESO Council

The ESO Council held its 31st meeting in Munich on December 1, 1977. The present members of the Council are:

Belgium:	M. Deloz
	P. Ledoux
	L. Poulaert
Denmark:	K. Gyldenkerne
	P. A. Koch
	B. Strömgren
France:	J.-F. Denisse (Chairman)
	S. Filliol
Fed. Rep. of Germany:	I. Appenzeller
	C. Zelle
The Netherlands:	B. Okkerse
	H. G. van Bueren
Sweden:	M. Fehrm
	P. O. Lindblad

The Sculptor Dwarf Spheroidal Galaxy

S. van Agt

The first visiting astronomer to use the 3.6 m telescope in October 1977 was Dr. Steven van Agt from the Astronomical Institute of the Nijmegen University, the Netherlands. At that time the object for his study, the Sculptor dwarf galaxy, passed close to the zenith of La Silla at midnight. He obtained prime-focus photographic plates for the study of variable stars in this nearby galaxy. A very large reduction work is connected with this kind of astronomical research, and it is therefore not yet possible to give detailed results, but Dr. van Agt here discusses the reasons for investigating the Sculptor dwarf galaxy.

Forty years ago Harlow Shapley announced in the Harvard Bulletin No. 908 the exciting discovery of "A Stellar System of a New Type" in Sculptor. The new system showed up as an assembly of hazy images on an exposure with the 24-inch Bruce telescope of the Boyden station in South Africa. The first confirmation of the reality of the object came from a plate obtained by S.I. Bailey in 1908, on which a faint patch of light was seen at the position of the Sculptur system. Bailey obtained this plate during a site-testing expedition with a 1-inch telescope and a total exposure over five nights of 23^h16^m! Additional observations with the 60-inch telescope resolved the individual stars and ruled out the possibility that the Sculptor system could be an extended cluster of galaxies.

Dwarf spheroidal galaxies are generally known by the name of the constellation in which they appear. Within approximately 250 kpc, seven Sculptor-type systems are now known including the recently-discovered dwarf in Carina. In addition, three dwarf spheroidal galaxies have been discovered by S. van den Bergh close to the Andromeda nebula. Within the Local Group there are now ten Sculptor-type systems known. Since these objects are difficult to detect behind the stellar foreground of our Galaxy it is not likely that this number is free from selection effects.

At the time of the first discovery the interest of astronomers was focussed strongly on the significance of the shapes of galaxies. Nowadays the dwarf spheroidal galaxies, and especially the nearest, offer a unique possibility to study the evolution of isolated stellar agglomerates.

The low surface density of the stars permits inspection of the individual stars, also in the centre region of the systems. It gives a unique possibility to trace, in a complete survey, all the variables, of which there are many, through the whole system.

The Sculptor dwarf spheroidal galaxy is located at a distance of 78 kpc (250,000 light-years). This is derived from a mean, apparent luminosity of 20.13 magnitude in B for the RR-Lyrae variable stars. On the sky the Sculptor system has a considerable size. The more than 600 variables which have now been discovered cover an elliptical area with a major axis of about two degrees, corresponding to a linear dimension of 2.7 kpc. The positions and identifications of the variables are now in press (Publ. of the David Dunlap Observatory).

New photographic observations have been obtained by the author at the prime focus of the ESO 3.6 metre telescope at La Silla in October 1977. The IIa-O plates reach beyond magnitude 21.5 in 40 minutes. The aim of the programme is the determination of the periods and the luminosities for a selection of the variables in the 16 arcminute field of the 3.6 metre telescope. The field on which the plates are exposed in this part of the programme contains a photoelectric sequence as well as a secondary photographic standard sequence.

At present the plates are being reduced at the Department of Astronomy of the University at Nijmegen, where a semi-automatic iris-photometer and a unique projecting Blink-comparator are available.

Although many characteristics of the stars in dwarf spheroidal galaxies are very similar to those of the stars in globular clusters, there are also significant differences. One is the occurrence of bright cepheids which do not follow the Period-Luminosity relation of population II cepheids. In the

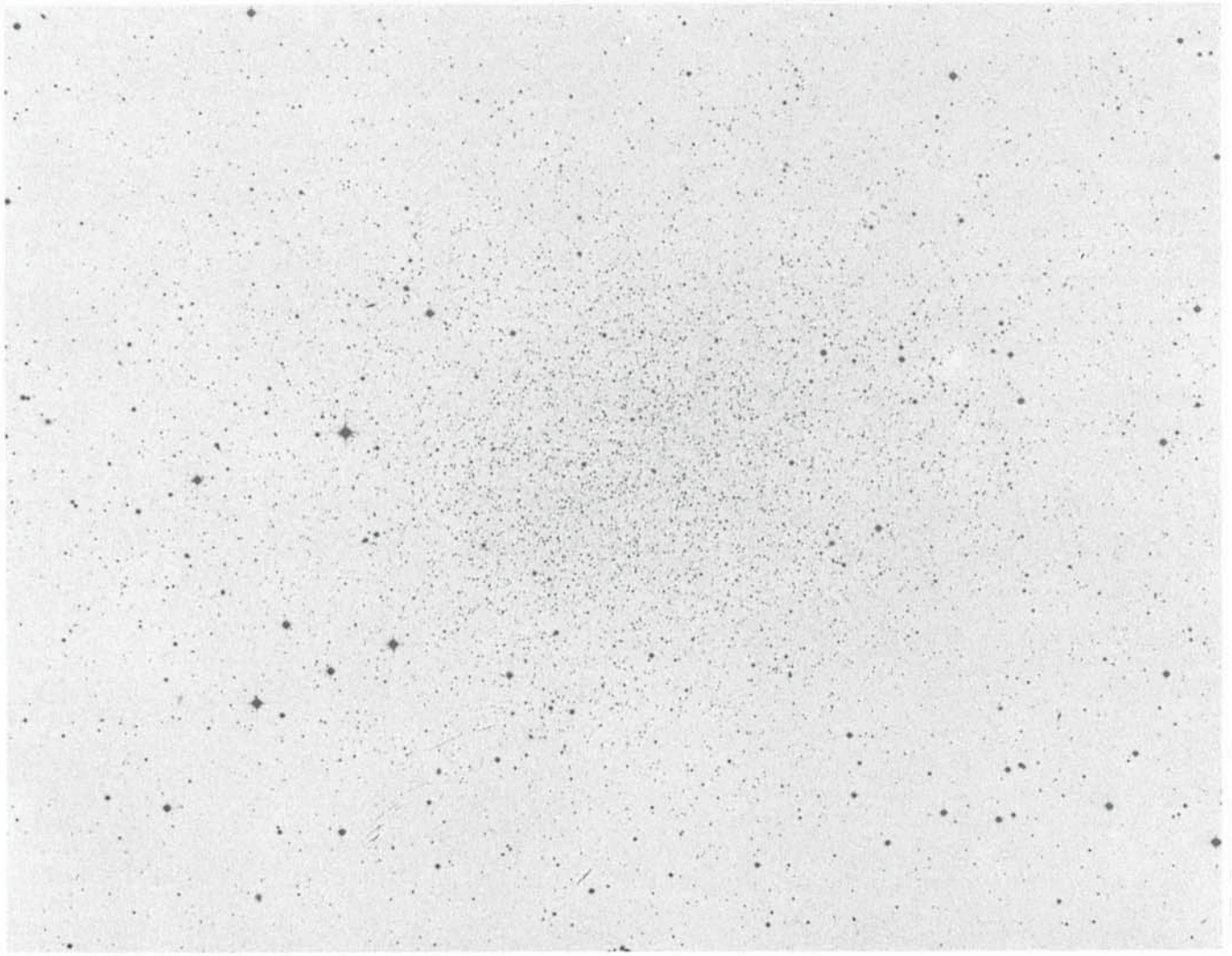

Fig. 1. — *The Sculptor Dwarf Spheroidal Galaxy reproduced from ESO Quick Blue Atlas plate No. 1737 of field 351, obtained on November 17, 1976. Exposure time 60 min on IIa-O behind a GG 385 filter. North is up and east to the left. ESO 1 m Schmidt telescope.*

Sculptor system and in other dwarf spheroidal galaxies these anomalous, so-called BL Her stars are brighter than the cepheids in galactic globular clusters by approximately 0.5 to 1.0 magnitude at the same period. Similar anomalous BL Her stars are likely to be present in the Small Magellanic Cloud.

It has been suggested that these stars belong to a younger population than the majority of stars in the same dwarf galaxy. In this hypothesis the galaxy itself was formed independently after the collapse of our Galaxy.

If higher masses are assumed for the anomalous BL Her stars, another hypothesis put forward to explain the existence of these stars is that mass-transfer is taking place within binary systems. The observational evidence, however, is not sufficient and in general the knowledge about the stellar content and more specifically about the numerous variable stars is still incomplete (cf. the review papers: Agt, S.L.Th.J. van, 1973, Variable Stars in Globular Clusters and in Related Systems, ed. J.D. Fernie (Dordrecht, Holland), p. 35; Bergh, S. van den, 1968, J. Roy. Astr. Soc. Canada, **62,** 1, and 1975, Ann. Rev. Astro. Ap. **13,** 217; Hodge, P., 1971, Ann. Rev. Astron. Ap., **9,** 35).

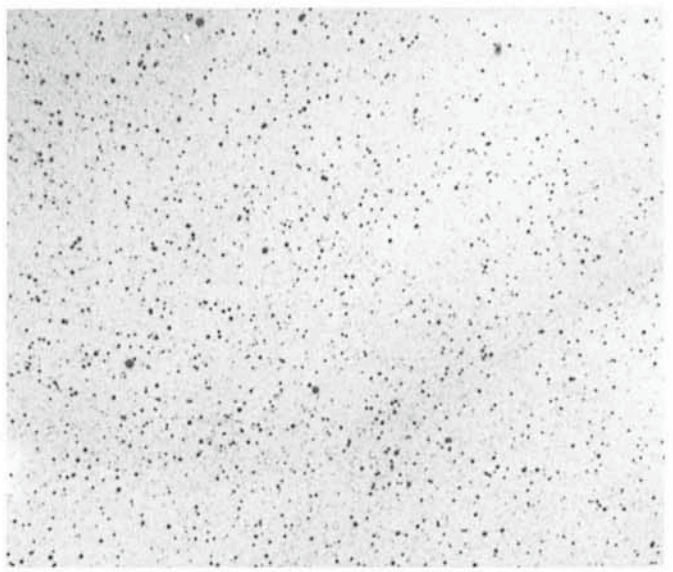

Fig. 2. — *A small part of the Sculptor galaxy, reproduced from a 3.6 m plate. Same orientation as in figure 1. Note the higher resolution. The seeing was mediocre and the limiting magnitude is 0.5 to 1.0 deeper than the Schmidt plate. This, however, is not important for photometric measurements, where the* integrated *density of the images is measured.* ▶