



Fig. 2. — *New stellar system in Sagittarius, photographed on July 15, 1977 with the ESO 3.6 metre telescope. 90 min, IIIa-J + GG 385. Observer: S. Laustsen. Same scale as figure 1.*

### Tentative Meeting Schedule

The following dates and locations have been reserved for meetings of the ESO Council and Committees:

September 22	Committee of Council, Geneva
November 3/4	Finance Committee, Garching
November 8	Joint meeting of Scientific Policy Committee and Instrumentation Committee
November 24/25	Observing Programmes Committee
December 1/2	Council, Munich

find a distance somewhere between 100 and 250 kiloparsecs (300,000 to 800,000 light-years) and a linear diameter of 30 to 75 parsecs.

On the contrary, the *Sagittarius* object (Fig. 2) at R.A. =  $19^{\text{h}} 27^{\text{m}} 0^{\text{s}}$ ; Decl. =  $-17^{\circ} 47'$  (1950) resembles the Phoenix and Sculptor objects and is more likely to be yet another, new irregular dwarf galaxy. In that case, it is well outside the Local Group of Galaxies, at a distance of several megaparsecs, and has a diameter of some kiloparsecs.

It is interesting to note that all four objects mentioned here can in fact be seen as weak, patchy "blobs" on the Palomar Sky Survey prints, if you know where to look! Otherwise they can easily be mistaken for plate faults.

## Eclipsing Binaries in the Globular Cluster Omega Centauri

*Of the many thousand eclipsing binary stars known, fewer than five are members of globular clusters. The powerful methods for determining masses, radii and chemical composition by means of photometric and spectroscopic observations of eclipsing binaries can therefore not be applied to the population II stars in globular clusters. This is really a pity, because improved knowledge about these very old objects would have direct impact on our ideas about the universe (distance scale, earliest epoch, etc.). Hoping to get things moving along this line, two Danish astronomers, Drs. Birger Niss and Henning E. Jørgensen of the Copenhagen University Observatory, have recently started a systematic search for eclipsing binaries in the bright southern globular cluster Omega Centauri. This is their preliminary report, not without hope for the future:*

In a recent article (*Messenger*, No. 7—Dec. 1976) one of us discussed the determination of *masses and radii* for eclipsing binaries, and from that the *helium abundances*.

For one particular group of astronomical objects, such data are of vital importance for our understanding of their past and present. We are thinking of *globular clusters*. As far as we know today, these are among the oldest objects known, and we believe that their chemical composition resembles the mixture of elements in the very early universe.

According to modern calculations of the formation of elements during the first few minutes of the universe, the abundance of helium should be somewhere between 20 and 30 per cent by weight. Could we therefore determine the amount of helium present in globular clusters, we should have an important cosmological parameter in our hands to check Big-Bang theories.

### Stellar Masses in Globular Clusters

With well-determined masses from binaries, we could also establish the absolute mass scale on the cluster sequence. Today, we only know the relative masses of stars in the HR diagrams of the globular clusters from stellar evolution calculations. We believe that horizontal branch stars have masses close to  $0.65 M_{\odot}$  (solar masses) and that sub-

stantial mass loss has occurred in the preceding very luminous red-giant phase. By determining masses of stars at subgiant luminosities we should therefore be able to derive the amount of mass lost. In this field we are also faced with another problem, namely that we cannot find the predicted amount of gas in globular clusters; where has it gone?

From the radii and temperatures we should be able to make an independent determination of the distance of the clusters. This in turn would give a better value of the absolute magnitudes of RR Lyrae variable stars, which are essential for determining the distance scale of the universe.

Still another property of importance in globular cluster research is the frequency of binary stars. At present we know that five clusters are X-ray sources. It has been suggested that these sources are not of the "classical" binary nature, using among others the argument that the frequency of binaries is low, which is, however, an open question.

From this it should be evident that a thorough search for binaries in globular clusters is of importance in clearing up such problems.

Today only 11 eclipsing binaries are known in the direction of globular clusters, but only three of these are thought to be real members. (One of these three, we believe, is not