limit to the value of the acceleration parameter q_0, as we expect a larger number of large redshifts for $q_0 = 1.0$ for instance, than for $q_0 = 0$.

But before reaching any conclusion from the analysis of the 3CR Catalogue, we have to ask ourselves the following question: is this sample really complete and unbiased? A recent study has shown that this is not the case. The antenna beam width of the Cambridge radio telescope used for preparing this survey was 13′.6 EW and 4°.6 NS. This beam width is so wide that some 3CR sources may still be affected by confusion of nearby sources. This could fortuitously raise the combined flux of the 3CR source and the confusing source above the catalogue limit of 9.0 Jy.

The more recent 4C catalogue is complete to 2.0 Jy (at the same frequency of 178 MHz). A search for all 4C sources in the neighbourhood of each 3CR source and a careful study of their radio spectrum (higher frequency measurements are usually not affected by confusion) have led to the rejection of 59 sources, whose flux density is lower than 9.0 Jy. In addition, 9 new sources were added which do not appear in the original 3CR because of resolution effects. Their angular size is so large that their peak flux density measured with the 3CR instrument was below the limit of 9 Jy. The corrected 3CR sample then contains only 205 sources outside the galactic plane. The slope of the logN/logS curve for the original 3CR is −1.80; for the new sample it is only −1.70, which makes the necessary time evolution somewhat less strong than anticipated, the excess of faint sources being smaller.

In conclusion, we may say that because of the tremendous amount of data accumulated in fifteen years on the 3CR sources, and although a large amount of effort and telescope time is still needed before the distance of all sources in the corrected 3CR sample is known, this is certainly a worth-while project as it will give us a better knowledge of the evolution of radio sources and perhaps some limitation on the possible value of the acceleration parameter q_0.

We must add that some more radio data are needed because for a few sources (like 3C 105.0, 3C 300.1, 3C 306.1, 4C −01.04, 4C 73.08, the last two not appearing in the original 3CR) the radio structure and position are not known well enough to make an unambiguous identification.

As an example, let us take the case of 3C 321.0. For many years, it was believed to be a single source in an empty field, but in 1974, Högbom and Carlsson showed with the Westerbork radio telescope that in fact it is an asymmetrical triple, the central component coinciding with a 16th-mag galaxy at z = 0.1.

Obviously, the study of deeper or higher frequency surveys should not be neglected as they will bring complementary and very useful information; but still a study, as complete as possible, of this limited sample of 205 extragalactic sources should have a high priority.

STATE OF IDENTIFICATIONS IN THE ORIGINAL AND IN THE CORRECTED 3CR SAMPLE

Total number of sources $\mathrm{l}61 \geqslant 10°$	Original 3CR		Corrected sample	
	255	%	205	%
QSS (no z)	55 (7)	21	45 (4)	22
Galaxies with z < .200 (no z)	77 (2)	30	70 (3)	35
Galaxies with measured z > .200	40	16	29	14
Galaxies without z, $m_{pg} < 21.0$	19	8	14	7
Galaxies without z, $m_{pg} \geqslant 21.0$	20	7	16	7
Empty fields	40	16	27	13
Absorbed fields	4	1.5	4	2

Two New Stellar Systems Detected on ESO Schmidt Plates

Last year, two new irregular dwarf galaxies were discovered on ESO Schmidt plates in the constellations Phoenix and Sculptor (*Messenger* No. 7, December 1976). Now, continued inspection of plates taken for the ESO (B) Survey has revealed another two, hitherto unknown stellar systems in Eridanus (River Eridanus) and in Sagittarius. Both objects have been photographed with the ESO 3.6 m telescope, and some preliminary conclusions may be drawn about their nature although further observations are clearly needed for confirmation.

The *Eridanus* object (Fig. 1) lies at position R.A. = $04^h 22^m\!.6$; Decl. = −21° 18′ (1950), only 3.5 arcminutes northwest of the 8th-magnitude star SAO 169422. There are reasons to believe that it is an intergalactic globular cluster. Assuming that the brighter, central stars, which are relatively red, are typical globular-cluster red giants of population II, ESO astronomers H.-E. Schuster and R. M. West

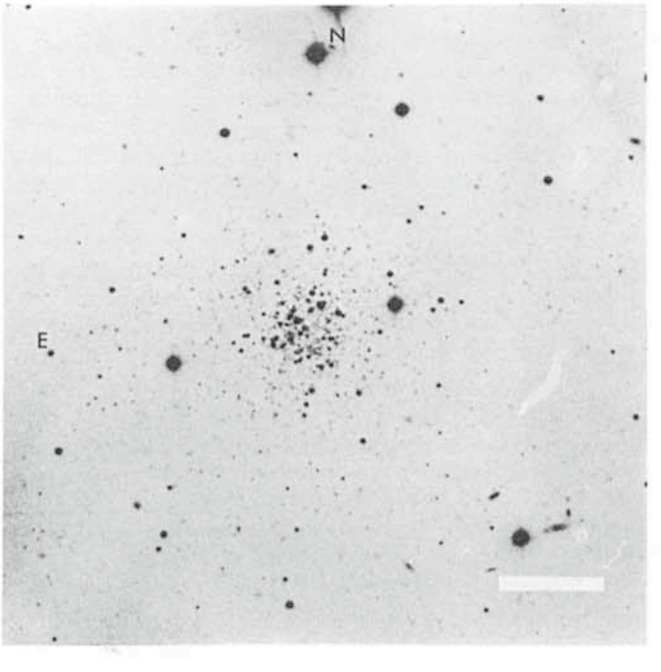

Fig. 1. — *Photo of stellar system in Eridanus obtained with the ESO 3.6 metre telescope in prime focus. Exposure time 90 min on IIIa-J + GG 385. Observer: H.-E. Schuster. The scale is indicated by the 1-arcminute bar.* ▶

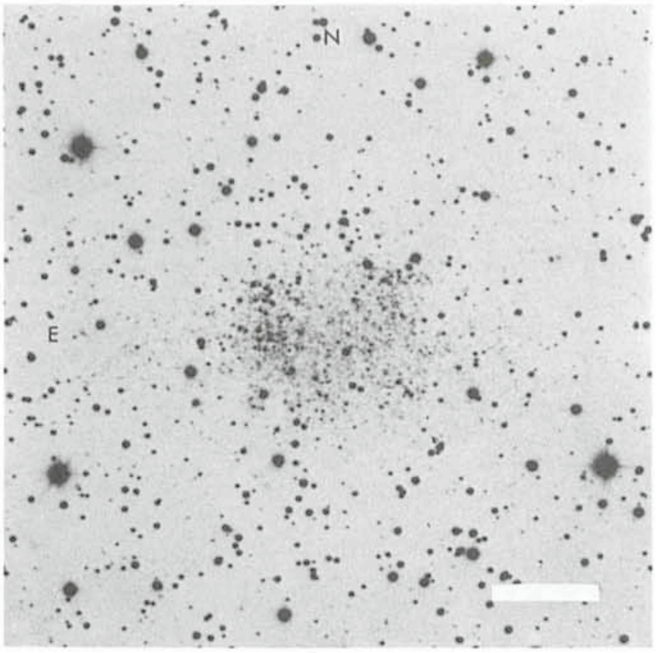

Fig. 2. — *New stellar system in Sagittarius, photographed on July 15, 1977 with the ESO 3.6 metre telescope. 90 min, IIIa-J + GG 385. Observer: S. Laustsen. Same scale as figure 1.*

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. = $19^h\,27^m.0$; 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 und 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 und 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 substantial 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