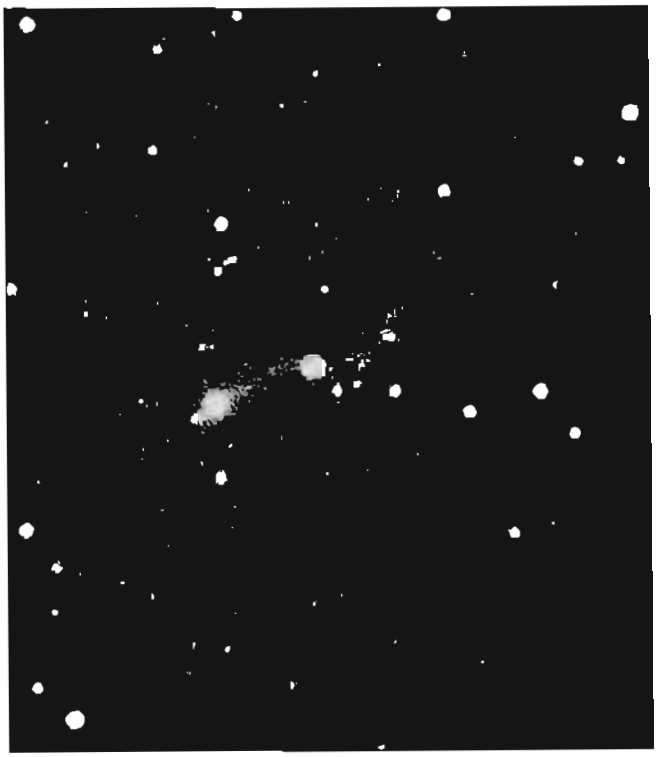
3,500 New Southern Galaxies Discovered in ESO/Uppsala Observatory Collaboration

The ESO/SRC Atlas

Astronomers had the first deep look into the northern sky some twenty years ago, when the Palomar 48″ Schmidt telescope surveyed the sky north of 30° declination. This survey, which was published on paper prints and on glass copies as the National Geographic Society-Palomar Observatory Sky Atlas, had a tremendous impact on optical astronomy. Many new galactic and extragalactic objects of great interest were found and most new radio-sources are still identified from this atlas. No wonder that astronomers were looking forward to a similar survey in the south, covering that part of the sky which the Palomar 48″ Schmidt (latitude + 30°) could not reach.

With the advent of two large Schmidt telescopes in the southern hemisphere, the ESO 100 cm Schmidt on La Silla and the 48″ Schmidt at Siding Spring (Australia) of the Science Research Council of the United Kingdom (SRC), it became possible to carry out a southern survey. It was agreed to make a joint ESO/SRC two-colour atlas, the blue plates to be taken with the SRC Schmidt in Australia and the red plates with the ESO Schmidt in Chile. The first part of this atlas is now being published by the ESO Sky Atlas Laboratory in Geneva. It will be the subject of an article in a future issue of the "Messenger".



Interacting galaxy ESO-147-IG03. Radial velocity 12,600 km/s.

The ESO (B) Atlas

To produce the ESO/SRC Atlas is a long affair, due to the number of plates and the very strict quality criteria that must be satisfied before a plate is accepted for this survey. The need for a quick look into the southern sky was felt by many astronomers, in particular those associated with the large radio-telescope in Australia and the three new large optical telescopes in the south, the Anglo-Australian 3.9 m at Siding Spring, the CTIO 4.0 m on Cerro Tololo, Chile, and the ESO 3.6 m on La Silla. It was therefore decided, in 1973, to carry through, as quickly as possible, a preliminary blue survey of the southern sky from − 90° to −20° declination with the ESO Schmidt telescope. More than three quarters of this survey have now been completed. It has been named the "Quick Blue Survey" or the ESO (B) Survey. The corresponding ESO (B) Atlas is being published by the ESO Sky Atlas Laboratory.

Seyfert galaxy ESO-116-IG15, discovered on ESO (B) Atlas in the joint ESO/Uppsala programme. Radial velocity 8,600 km/s.

The ESO/Uppsala Search

In order to improve the usefulness of the ESO (B) Atlas and to help astronomers preparing their observations of southern celestial objects, ESO has been collaborating, since 1973, with the Uppsala Observatory in the identification of known objects and the discovery of new ones on the ESO (B) Atlas. The search programme identifies:

(a) star clusters listed in the Budapest Catalogue,

(b) planetary nebulae listed in the Perek and Kohoutek Catalogue,

(c) galaxies with diameters larger than 1 arcminute listed in the NGC and IC catalogues and modern catalogues, and

(d) disturbed galaxies down to the smallest possible size.

The ESO/Uppsala lists are published periodically in Astronomy & Astrophysics Supplement Series. While listed planetary nebulae and stellar clusters mostly com-

prise known objects, the situation is quite different for galaxies. Numerous new galaxies are listed, all the way from humble dwarfs to giant ellipticals, not to forget the dramatic scenery of interacting systems. By April 1976, 191 fields (4,474 sq. deg. in total) have been investigated out of the 471 atlas fields south of $-27^{\circ}5$ (11102 sq. deg.). Of the more than 5,500 objects which were found in these 191 fields, 70 per cent are new discoveries, including some 3,500 hitherto unknown galaxies. When mapping the apparent distribution of 3,593 galaxies (including interacting systems) with diameters larger than 1 arcminute, regions of high number densities can be recognized at (12^h, -45°) and (18^h to 21^h, -65° to -45°). Very few galaxies are of course found near the galactic plane. Most fields south of -45° have now been investigated.

Spectroscopic Observations of Galaxies in the ESO/Uppsala Lists

The ESO/Uppsala lists have already been extensively used by southern observers. At ESO, image-tube spectra have been obtained of several interesting galaxies in a pilot programme. This has resulted in the discovery of at least five new Seyfert galaxies. ESO and the Uppsala Observatory now collaborate in obtaining spectra of the most interesting ESO/Uppsala galaxies. Observing time has been allotted in July-August 1976 with the ESO 1.5 m telescope for the first concentrated effort in this important "treasure hunt" programme. Participating astronomers are Drs. Bergwall, Ekman, Lauberts and Westerlund (Uppsala), and Drs. Breysacher, Muller, Schuster and West (ESO).

Day-time Observations with the 1 m Photometric Telescope

The efficiency of a telescope is measured not only in the amount of light it is able to collect, but also in the total observing time. A small telescope in a good climate may be much more useful than a big one in a cloudy place. Here Dr. W. Wamsteker, ESO staff astronomer, reports how to make even better use of the clear skies above La Silla:

The effective observing time available on the ESO 1 m telescope has recently been doubled. Because observations in the infrared are, similarly to radio observations, not very seriously disturbed by the bright daylight sky, it is possible to make observations at these wavelengths 24 hours a day.

The ESO 1 metre photometric telescope with its sophisticated telescope control system was selected to be the most appropriate telescope for the acquisition of infrared observations. To detect astronomical infrared signals, special requirements are posed on the telescope which could be fulfilled by the 1 m.

At ESO-Chile, an intricate linkage has been established between the telescope control system and the data acquisition system by Mr. Rönnbom and Dr. Wamsteker. This combined system was in full use for the first time in February 1976, for a joint observing programme of Wamsteker (ESO), Schultz, Kreysa, Sherwood (all from the Max Planck Institute for Radioastronomy, Bonn), using a sensitive InSb detector system designed by Dr. Kreysa. The observations were very successful and clearly showed the capabilities of such a system. During the day, the telescope was used in a fully automatic scanning mode to study the galactic centre. Six new infrared sources close to the galactic centre were discovered.

This first experience with a radioastronomical approach to infrared observing has been very encouraging and it is expected that after more experience the system can be improved and will also be applicable to other ESO telescopes.

The ESO Library in Geneva

The ESO Librarian-in-Chief, Miss E. Sachtschal, has been in touch with astronomy and astronomers for several years.

Gracefully responding to the editor's request, she here gives her impression of this important service:

One year ago, the ESO library in Geneva moved from the TP barrack to somewhat more comfortable and spacious surroundings with a splendid outlook to the Jura mountains.

In spite of the increased floor area, the library has just enough space for the next two years until the move to its final location in Munich. There, 250 m² are expected to satisfy all the needs of a modern astronomical library.

The library staff in Geneva tries to fulfil "nearly" all the literature wishes of the increased ESO group of astronomers and to make them happy by unearthing for them "Faint and Nearby Stars, Galaxies and Nebulae", even unseen "Black Holes", not to forget comets; in brief, anything printed in books, periodicals and atlases—and to complete the collection as far as the ESO library budget allows.

The most recent discoveries and news in astronomy in form of preprints coming from all over the world (in exchange to ESO papers) are also displayed in the library.

The library, "centre of the Astronomical Cosmos of ESO", has the tendency to a relativistic expansion, and there is "pulsating and rotating" life already around it in the form of theoretically driven, heated discussions.