

de Vaucouleurs' counts of stars brighter than  $m_{pg} = 14.3$  shows that 80 % of the supergiants have been detected. The apparent distribution centroid for the extreme Population I of the bar is found to be located at  $\alpha = 0^h57^m3$ ,  $\delta = -72^\circ45'$  (1975.0). The mean colour excess is  $E_{B-V} = 0.04 \pm 0.03$  for foreground stars, and  $E_{B-V} = 0.07 \pm 0.04$  for SMC members. The gas-to-dust ratio is discussed, and its value is found to be  $R = 7.5 \times 10^{22} \text{ atom cm}^{-2} \text{ mag}^{-1}$ .

The chemical composition of the Magellanic Clouds is poorly known. In "Conference on Research Programmes for the New Large Telescopes" (ESO/SRC/CERN, Geneva, 1974), Graham has emphasized the great need of accurate metal abundance determinations in the Magellanic Clouds. The interest of this study is twofold; it will lead to a better knowledge of the Magellanic Clouds and, in the same time, it will be a key to our understanding of the properties of our local group of galaxies.

Almost all the abundance determinations in the Magellanic Clouds rest upon very delicate calibrations: the large spread of the results given in the literature proves how highly difficult it is to carry out such calibrations.

R. Foy has undertaken a direct determination of the stellar abundances in the SMC through high-dispersion spectral analysis. During his recent observing run, he obtained two good-quality spectrograms of a solar-type supergiant ( $B = 11.8$ ). These spectrograms have been taken with the Lallemand electronic camera and the echelle spectrograph at the 1.52 m telescope in La Silla. The dispersion is  $8 \text{ \AA mm}^{-1}$ . The detailed analysis of these spectra will lead

to a determination of the chemical composition of the SMC star with the same accuracy than that obtained for a star in the solar neighbourhood.

Obviously, similar observations of other stars are still required for the above-cited purposes: knowledge of the global chemical composition of the Magellanic Clouds, and its interpretation with respect to the other dwarf local galaxies.

High-velocity stars have been systematically searched for with the objective-prism technique by Nicole Carozzi-Meyssonier (Marseille) between the two Magellanic Clouds and between the LMC and the Galaxy, in order to detect possible links between these objects.

124 stars have been found; they can be classed into two groups. Forty-nine of them are B and A-type supergiants belonging to the SMC wing. The remaining 75 stars, which are essentially of late type (G-K) and of luminosity classes III to V, are galactic; they are found between the two Clouds and between the LMC and the Galaxy. These results have already been published.

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In this résumé I have presented only the stellar work and not any of the nebular investigations in the direction of the Magellanic Clouds, undertaken primarily by the Marseille interferometry group.

I wish to express my gratitude to all those who so kindly sent me their contribution and thus made this review possible.

## The Bochum Telescope Explores the Southern Sky

*Three nations have national telescopes on La Silla, Denmark (50 cm and 1.5 m), the Federal Republic of Germany (61 cm) and Switzerland (40 cm). In the last issue of the Messenger, we heard about the Swiss telescope which has recently started observations in the rich southern sky. The Bochum telescope is an oldtimer on La Silla and has produced an incredible amount of valuable observations. Professors J. Dachs and Th. Schmidt-Kaler of the Bochum University explain how the 61 cm telescope has contributed to the advance of astronomy in the southern sky:*

Recently, the Bochum 61 cm photometric reflector at La Silla celebrated its eighth anniversary. Following a trilateral agreement between the Director of the European Southern Observatory, the Deutsche Forschungsgemeinschaft (German Research Council) and the University of Bochum, a Boller & Chivens 24-inch Cassegrain telescope was installed at La Silla in September 1968, next to the former dome of the ESO 1 m telescope. The Bochum telescope is housed in the only aluminium dome at La Silla glistening in the sun on the western slope of the hill, overlooking the ESO hostel and a large part of the Pacific Ocean.

An account of the instrument, of its installation and of the stellar photometer attached to it has already been given in the ESO Bulletin No. 5 at page 15 ff. (1968). Meanwhile, work done at the 61 cm reflector by Bochum astronomers has led to not fewer than 80 printed contributions in scientific astronomical journals!

The main objects for photometric studies by Bochum observers have been luminous OB stars and supergiants in southern open clusters, in selected Milky Way fields and in the Magellanic Clouds. Investigation of the brighter stars of

more than 120 open clusters with the 61 cm telescope by Drs. Moffat and Vogt (at present staff member of the European Southern Observatory) has resulted in a much better definition of distant spiral structure in the southern hemisphere of our Galaxy. Photometry of about 400 supergiants in the Large Magellanic Cloud by Dr. Isserstedt (now with the University of Würzburg) has approximately doubled the number of members of this neighbouring stellar system for which photometric classification and the amount of interstellar absorption are known. The distribution of the early-type supergiants revealed spiral features of the Large Magellanic Cloud. Light curves of small-amplitude magnetic variables and their spectral variations are another topic being investigated at the 61 cm telescope by Dr. Maitzen (now at Vienna Observatory) who is also a frequent guest at ESO telescopes.

Data acquisition with the Bochum telescope has been improved very much by a computer control of the photometer installed in 1971 using a Hewlett-Packard type 2114 B computer with 8K memory. In order to provide sufficient space for the bulky electronic equipment needed for computerization, ESO has been kind enough to enlarge the Bochum building by a third room in the ground floor serving

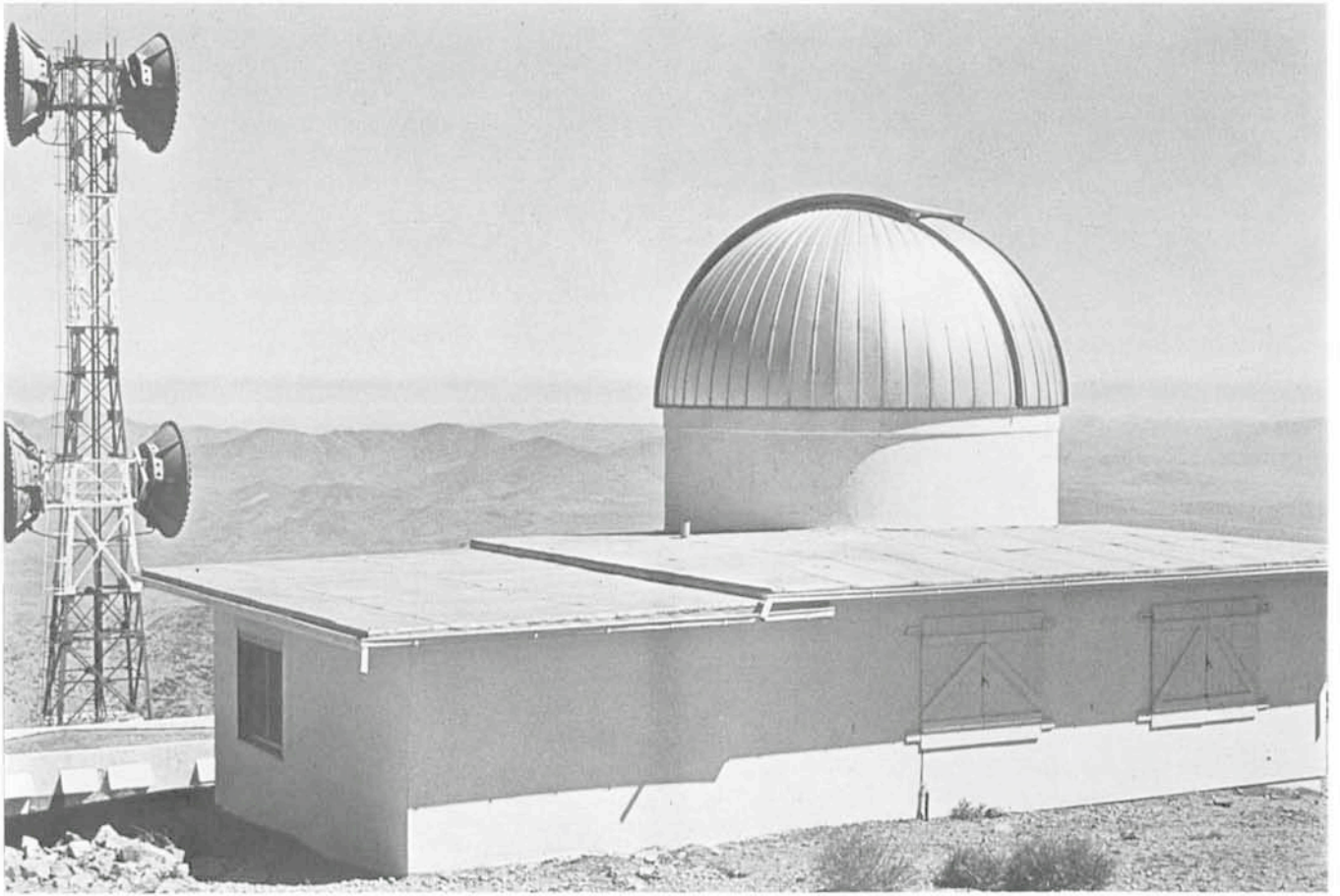


Fig. 1. — The Bochum University station at La Silla.

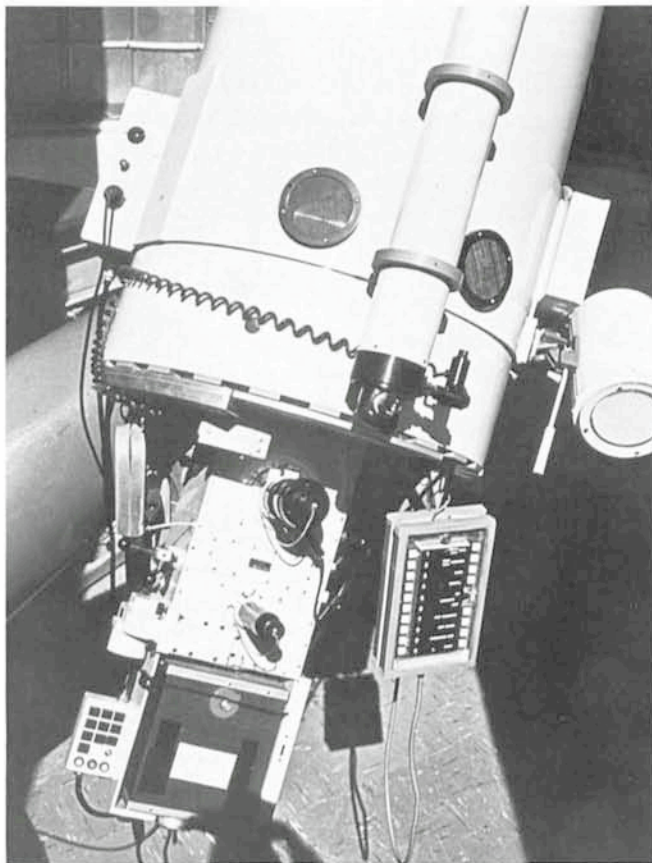


Fig. 2. — The 61 cm Cassegrain telescope of the University of Bochum with the photoelectric photometer attached.

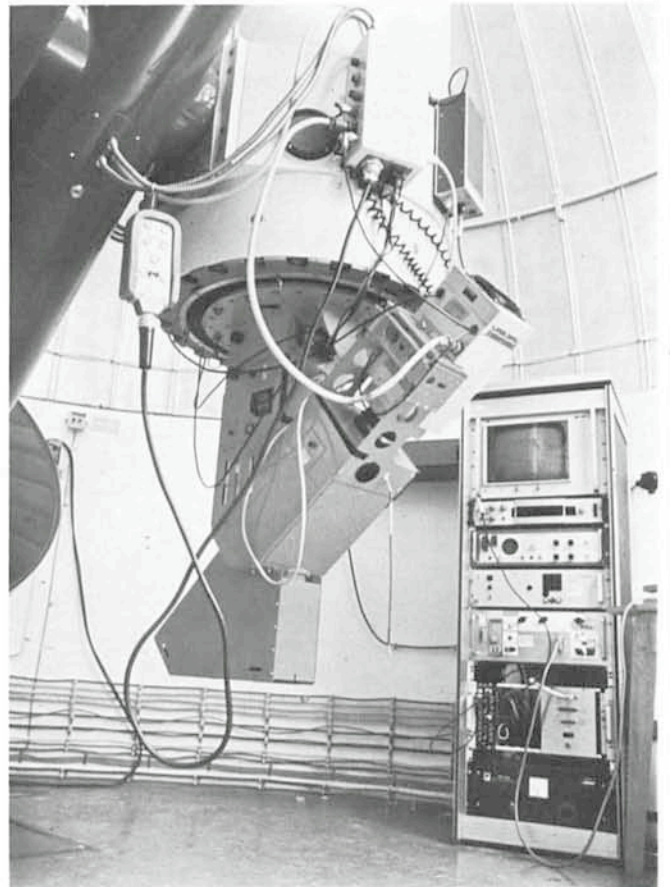


Fig. 3. — The spectrum scanner at the 61 cm telescope.

as the new dormitory for the Bochum observers, while the first two rooms are housing the data-acquisition system and spare instruments.

Numerous European guest observers and ESO staff astronomers have also used the 61 cm telescope with its photometric equipment and computer control which are at ESO's disposal during 30 per cent of every year's observing time.

A more complex addition to the equipment—so far used only by Bochum observers—is a photoelectric rapid spectrum scanner installed in 1973. It is a single-channel instrument containing a blazed grating in a crossed Czerny-Turner mounting which is driven by a computer-controlled step motor. The spectrum scanner has been extensively used in order to establish a sequence of southern standard stars with photoelectrically measured spectral energy dis-

tribution calibrated by comparison with northern standard stars and with copper and platinum black bodies. Besides, spectral energy distributions of different types of stars, e.g. supergiants and peculiar stars are being studied with the scanner as well as emission-line profiles of stars with extended envelopes like Be, Wolf-Rayet and Y-ray stars.

Temporarily, a super-wide-angle camera of  $140^\circ$  field developed at Bochum was installed at the site to obtain photographic surface photometry of the southern Milky Way in four colours. As a by-product an Atlas of the Milky Way was assembled and has now been published.

The Bochum observers are grateful to ESO for the opportunity to participate in the investigation of the southern skies, and look forward to another many years of generous and fruitful cooperation at La Silla.

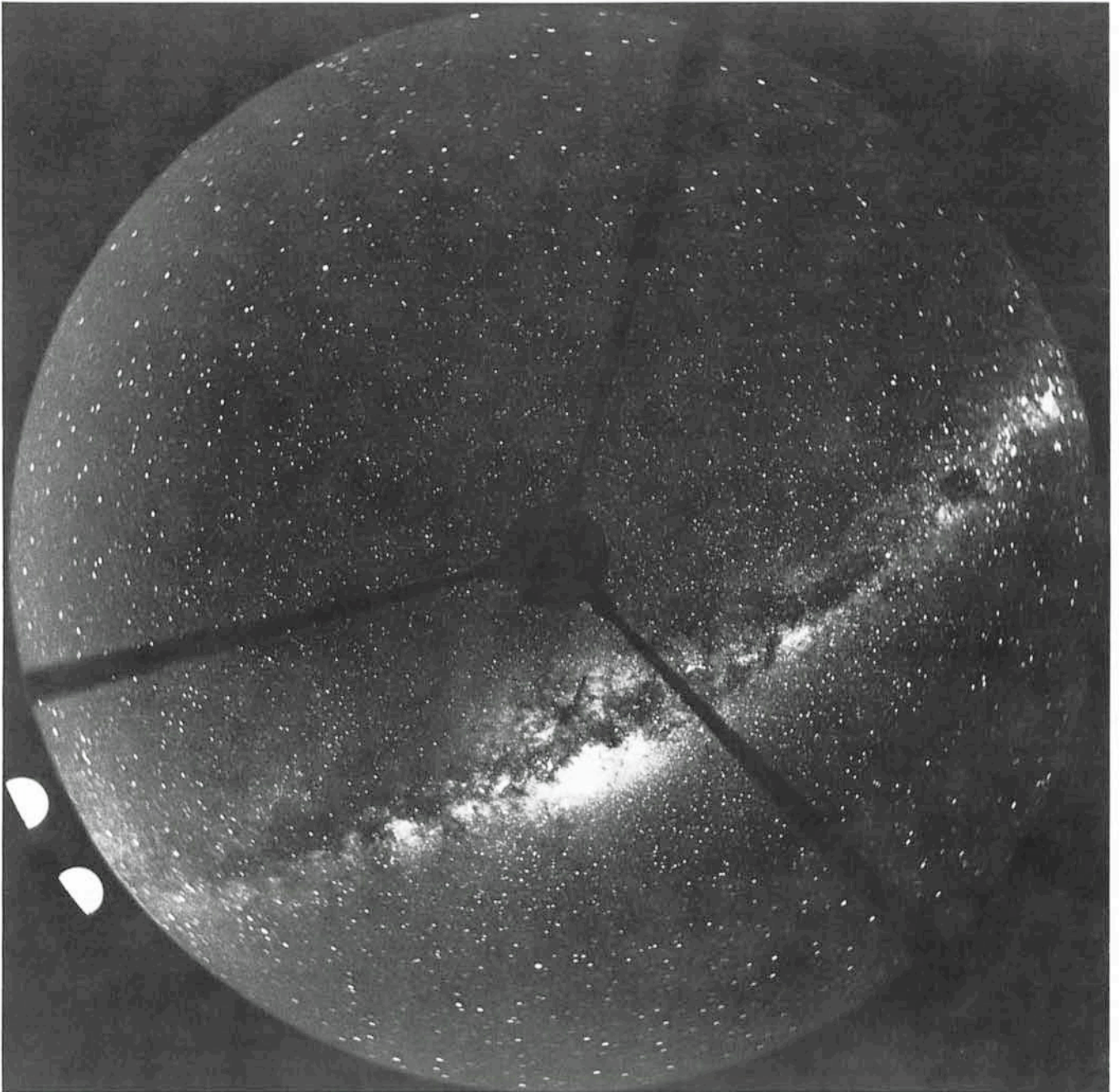


Fig. 4. — The central region of the Galaxy photographed in red light with the  $140^\circ$  wide-angle camera of the University of Bochum.