



The Italian Minister for Coordination of Scientific Research and Technology, Mr. L. Granelli (right), and the Director General of ESO, Professor L. Woltjer, at the Second VLT Workshop in Venice.

by the ESO Council. It is expected that the definitive, detailed project proposal will be presented in April 1987 and that a final decision, including the financing by member states, may be taken later in 1987. The cost of the VLT proper is estimated at 309 million DM plus 48 million DM for auxiliary instrumentation.

The ESO VLT project consists of an array of 4 telescopes, each of which has a single-blank mirror with a diameter of 8 metres, resulting in a total, equivalent aperture of 16 metres. The telescopes can be used individually or combined, depending on the type of observations, giving an unprecedented degree of flexibility and greatly enhancing the observing efficiency. During the past two years, several specialized Working Groups have evaluated the scientific programmes which can be envisaged with the ESO VLT. Among these, observations of the faintest and most distant quasars and galaxies will have a profound impact on cosmology, the study of the structure and evolution of the universe in which we live. High-resolution spectral observations will allow a detailed chemical analysis of individual stars in our own and in other galaxies, contributing to our knowledge of the evolution of galaxies and the genesis of elements. When used in the interferometric mode, the VLT will achieve angular resolutions in the milliarcsecond range and permit observations of the innermost regions of for instance starforming areas and galaxy nuclei which may have black holes near their centres. These are but a few of the many, extremely interesting observational possibilities with the ESO VLT which were identified by the Working Groups and discussed in Venice.

The technologically most advanced auxiliary instrumentation is needed to perform these observations and much time was dedicated to this central subject. A great variety of instruments, imaging and spectroscopic, visual as well as infrared, were proposed. Based on these suggestions, a preliminary fundamental instrumentation payload for the VLT will now be established and circulated for further discussion in the user community. It was stressed that it is the intention to involve national laboratories in the member countries in the construction of these complicated, high-technology instruments, although a major part of the necessary funds will have to come through ESO.

Among the still unresolved questions is the choice of a site for the VLT. Detailed meteorological observations have confirmed the excellency of the La Silla site, but even better observing conditions may possibly be found on the top of mountains further north in the Atacama desert. Following local investigations, a promising site has been identified at Cerro Paranal, about 150 kilometres south of the town of Antofagasta. There is a clear consensus that the "seeing" (a

measure of the atmospheric turbulence which degrades the sharpness of astronomical images) will play a decisive role in the choice of the VLT site. However, other considerations like cost of development of a new site must also be taken into account. In this context, a reduction in operating costs may be obtained by extended use of remote control of the VLT, for instance from Europe. This is now thought feasible, in particular after a very successful experiment earlier this year, during which a 2.2 m telescope on La Silla was controlled via a computer-to-computer satellite link by astronomers at the ESO Headquarters in Garching.

Since the Venice Workshop, several meetings have been held in the member countries and the ESO scientists and engineers have given informative talks about the VLT in a variety of places. With the support of the Institut National des Sciences de l'Univers (INSU) and its director, M. Berroir, a VLT press conference took place at La Villette, Paris, on November 13. The ESO Finance Committee discussed the VLT project during its meeting later in November, as will the ESO Council, when it meets at the ESO Headquarters on December 11 and 12, 1986.

In order to keep to the tight VLT schedule, ESO is engaged in an extensive preparatory programme. Since the time schedule is set by the acquisition of the optics, some work on a prototype 8-m blank should start already in 1987. Both conventional mirror materials, but also aluminium and steel are being tested at ESO. All mirrors will be exceptionally thin in order to reduce weight and thereby significantly save cost. ESO has recently successfully tested the principle of "active" optics, by computer controlling the surface of a thin 1 metre mirror. This new concept will play a decisive role in the VLT, so that it can achieve a superior performance when it enters into operation.

Note that the Proceedings of the Venice Workshop and a VLT Slide Set are now available from ESO; see the advertisement in this issue of the *Messenger*.

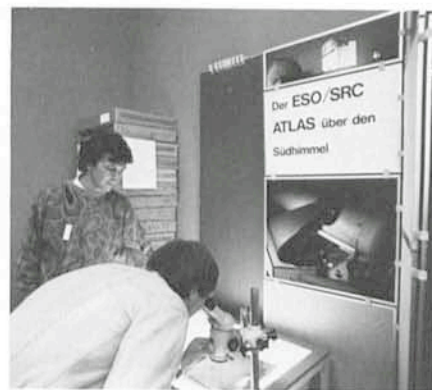
The Editor

Open House at ESO-Garching

On October 25, 1986, the science institutes in Garching again jointly organized an Open-house day. Preparations were made at ESO during the weeks before, establishing a well-defined path through the ESO Headquar-

ters with demonstrations and exhibitions along the route.

When the doors opened at 9 a.m., several visitors were already waiting outside and during the next 7 hours, the overworked ESO staff guided about



2,500 interested persons through the building, compared to about 500 the years before. Whatever the reason, an unprecedented number of persons had decided to take the opportunity to visit our organization and learn about our work. Each of them was welcomed at the entrance and received an ESO brochure. The models of the Very Large Telescope and the New Technology Telescope were much admired and the

auditorium was filled to the very limit when the ESO film was shown every 30 minutes. In the terminal room, the advanced image processing systems caught the eyes of computer-minded persons and the children enjoyed the instantly plotted TV pictures. The names and orbits of minor planets again attracted much interest and the major pictorial exhibition about ESO and the science which is done at La Silla led to

extensive discussions. At the exit, there was a hectic sale of ESO pictures and slides and many orders were received during the following days from people who had taken along the Picture and Publications Catalogue.

The overwhelming, but extremely welcome influx may be taken as a sign of the greater visibility of ESO.

New Light on the Binary Planet Pluto-Charon

M. W. PAKULL and K. REINSCH, Institut für Astronomie und Astrophysik, Technische Universität Berlin

Earthbound observers currently witness a rare celestial phenomenon that will only recur in about 120 years. Presently the plane of Charon's inclined orbit around Pluto is sweeping over the inner solar system allowing mutual occultations and transits of the plane-

tary disks to be observable from earth (cf. Fig. 1).

Since the shapes of the resulting light curves reflect the geometry of the system, we may hope to determine the relative sizes and albedos of the two bodies with much better accuracy than

previously possible. This technique is of course well known in astronomy as much of our knowledge of stellar radii for instance has been derived from the analysis of the light curves of eclipsing binaries.

Due to the expected errors in the rel-