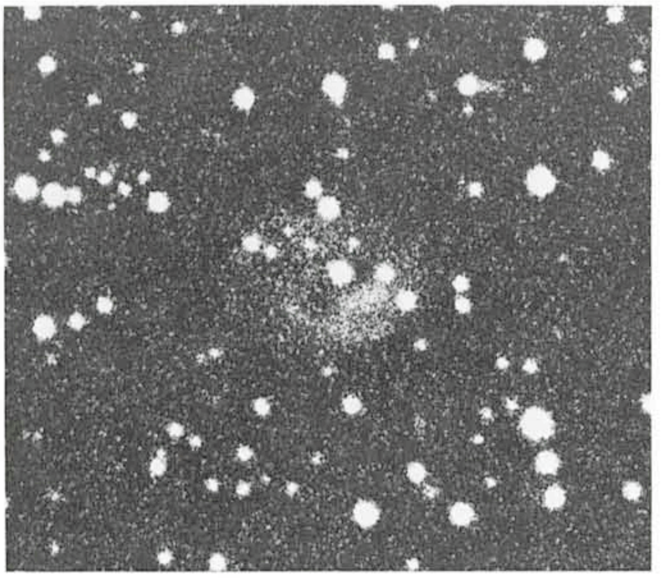
A New Planetary Nebula

On ESO Quick Blue Survey plate No. 869 (field 263), a small galaxy cluster may be seen in the NW corner. The three largest galaxies were included in ESO/Uppsala list No. IV which was published in February 1977 (Holmberg et al., *Astron.&Astrophys. Suppl. Ser.* **27,** p. 295) as ESO 263-IG01, 263-G02 and 263-IG03.

Spectroscopic observations were carried out in March of the three objects and to some surprise it was found that the second object, 263-G02 is not a galaxy but a planetary nebula in the Milky Way! The low-dispersion spectrum also showed that the central star is of spectral type O.

What is the reason for this mistake? First of all, the coincidence with the galaxy cluster, but also because the structure in the gaseous envelope of the planetary may remind us of some sort of spiral arms. The "nucleus" was described as: Bright, or star?, but many galaxies have similar intensive nuclei. Clearly one can never be quite sure of the nature of such an object before a spectrum has been obtained.

The correct name of the object is now 263-PN02.



Enlargement from the original ESO Schmidt plate of the new planetary nebula ESO 263-PN02.

The Control System of the ESO 3.6-metre Telescope

The first visiting astronomers to the 3.6-m telescope are expected to show up sometime in October 1977. Continuing the Messenger *series of descriptions of the various parts of the large telescope, Dr. Svend Lorensen from ESO/Geneva here introduces the control system for which he has written the software. Unlike most of the mechanical parts of the telescope, the control programme will interact directly with the observers and it is of great importance that it is "astronomer-friendly". Those who have used the system so far are very happy with its performance and it is good to know that further improvements can easily be inserted into the very flexible system whenever this will be required.*

The control system of the 3.6-m telescope as it will be available to the visitors later in 1977 features the possibilities already known from some of the ESO telescopes: a highly accurate programmable digital servo-system, and a good deal of other facilities aiding the observer to obtain reliable measurements. The control system—as it is designed with an integral minicomputer—is on purpose an open-ended system. The continuous development will stay compatible with the present description, and add a growing number of options—hopefully to the pleasant surprise of the future observers.

Operation Modes

The control system basically has five operation modes:

Guide: The telescope is tracking. With the handset a small correction rate can be applied. The dome follows the telescope as necessary with low speed (0.1 degree/sec).

Set: The telescope is tracking. With the handset a medium correction rate can be applied. The dome follows as necessary.

Offset: The telescope is tracking. With the handset steps can be applied. The dome follows as necessary.

Slew: The telescope does not track. With the handset the telescope can be moved with high speed (1 degree/sec). The dome does not follow the telescope.

Preset: The telescope goes with high speed to a given position. The dome goes with high speed (1.5 degree/sec) to the corresponding position.

All the tracking rates, correction rates, and offset amounts can be assigned within reasonable limits by commands at the terminal. The correction rates and offset amounts are multiplied with sec δ before they are applied in α.

Control Panel

The relevant part of the control board consists of three units. The first contains a normal CRT terminal. It is primarily used to input all commands which are not defined by push-buttons: coordinates of objects, rates of tracking, filters at the Cassegrain adaptor, etc. Furthermore a good deal of messages show up on the screen, some of interest for the observer, others more to the benefit of the maintenance team. All the transactions of this terminal are logged on a disc file for later analysis.

The next section contains a TV monitor with a selector switch. It can be connected to the cameras of the prime-focus guide probe, the Cassegrain-focus guide probe, or the Cassegrain centre field acquisition. Remote control of the high voltage of the cameras as well as of the shutters are also provided.

The third section consists of digital displays and illuminated push-buttons to command and show all basic telescope functions. This panel is logically divided into three rows. At the top row the sidereal time and the actual telescope coordinates are continuously displayed with a resolution of 0.1 second and 1 arcsecond, respectively. At the centre row a general-purpose display and eight buttons give the choice between Cassegrain focus, air-mass, zenith distance, hour angle, the coordinates of the Casse-

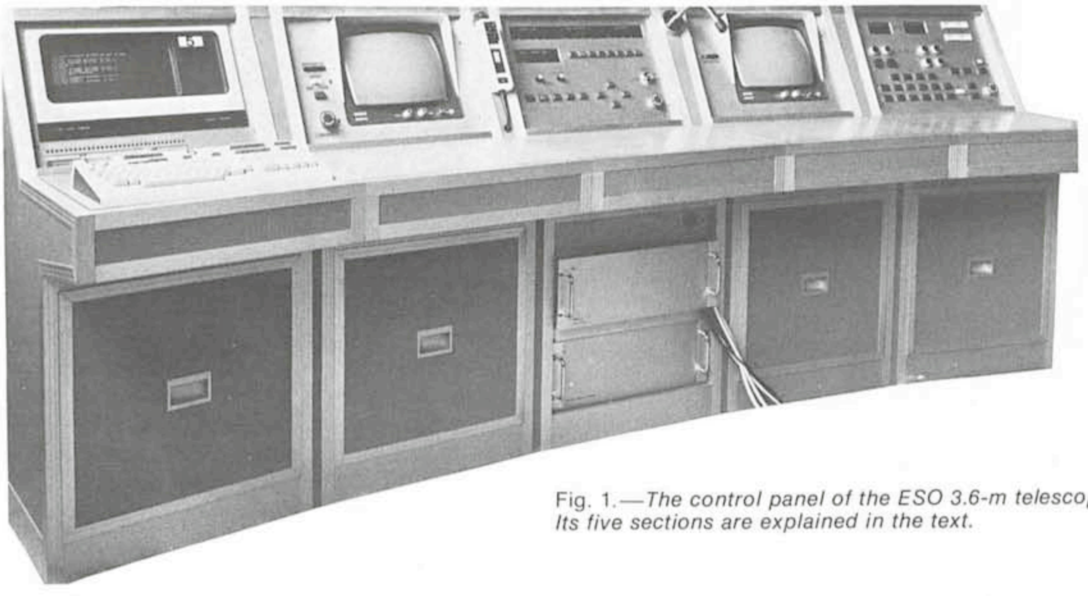


Fig. 1.—*The control panel of the ESO 3.6-m telescope. Its five sections are explained in the text.*

grain guide-probe position, and a chronometer used e.g. for exposure time.

In the lowest row five illuminated buttons display the actual operation mode and allow the choice of a new mode. Four buttons command the movement of the telescope in the positive or negative α or δ direction. The standard handsets which are located in the prime cage, the Cassegrain cage, and the control cabin contain the same functions, except the slew mode.

Encoder System

All the encoders of the telescope's axes (α, δ, coudé mirror 5, Cassegrain guide-probe stage) are incremental encoders with one zero-pulse per revolution. As the electronics are never switched off, except for maintenance, they perform effectively as absolute encoders. The encoder system uses the zero-pulses to detect and recover errors due to lost or superfluous pulses, thus maintaining long-term stability. The zero-points of any of the hereby defined coordinate systems can be adjusted by a simple command at the terminal.

The α and δ axes have each two different encoders: a medium-resolution (6 arcseconds) encoder is connected to the gear train of the drive motors. It is used to provide the basic coordinate system for displays and the preset mode. A high-resolution (0.05 arcsecond) encoder is coupled via a friction wheel directly to the big gearwheel. It maintains the digital servoloop of the drive system, which is enabled for all tracking. We have found that the stability of the latter is high enough to make 10-minute photographic exposures without any guiding corrections.

The basic reference system for positions and rates is presently the true mechanical system of the telescope. When at the beginning of 1978 the deviations between this system and an ideal telescope system are established, all positions and rates will be referred to this virtual telescope.

Dome, Hatches and Windscreen

The dome has a 6 metre wide slit, which can be closed by four independent hatches. For observation, one or more of these hatches are driven up towards or past zenith, leaving an aperture of 13 metres (37 degrees altitude). This aperture can then be further covered by a windscreen with a 6x6 metre square aperture.

The dome and the optional windscreen are moved automatically in steps, whenever necessary, to follow the celestial object. The opening of the hatches is suggested by the control system, but only executed at the observer's command.

Adaptors

The simplified prime-focus adaptor has only little remote control. It is mainly designed for local operation, where control is available for focus, guide-probe position, guide-probe field TV monitor, a standard handset to control the telescope and an intercom system.

The Cassegrain adaptor is designed for full remote control and the construction was described in the last issue of the *Messenger* (No. 8, p. 14). The available commands are the useful combinations of the many optical elements: large-field viewing, focus test, guide-probe viewing, slit viewing, move guide probe to given position, etc.... The handset of the telescope can also be assigned to the guide probe XY-stage in order to scan for a guide star and to centre it.

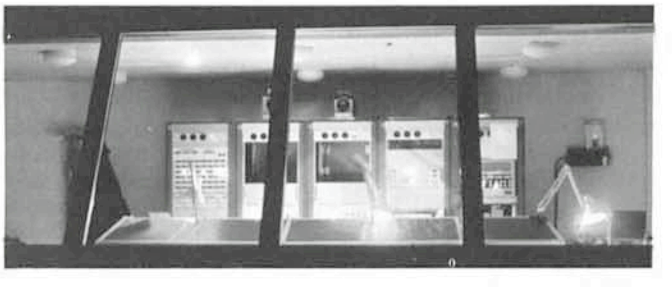


Fig. 2.—*The control room on the observing floor of the 3.6-m telescope building on La Silla. It is separated from the dome with insulating glass panels. In the front the top of the control panel (Fig. 1) and behind the electronic racks. This photo was made at night and does not show the busy night assistants in the room (exposure time 5 minutes with available light; B. Dumoulin).*

ESO, the European Southern Observatory, was created in 1962 to... establish and operate an astronomical observatory in the southern hemisphere, equipped with powerful instruments, with the aim of furthering and organizing collaboration in astronomy ... It is supported by six countries: Belgium, Denmark, France, the Federal Republic of Germany, the Netherlands and Sweden. It now operates the La Silla observatory in the Atacama desert, 600 km north of Santiago de Chile, at 2,400 m altitude, where nine telescopes with apertures up to 3.6 m are presently in operation. The astronomical observations on La Silla are carried out by visiting astronomers—mainly from the member countries—and, to some extent, by ESO staff astronomers, often in collaboration with the former.

The ESO Headquarters in Europe will be located in Garching, near Munich, where in 1979 all European activities will be centralized. The Office of the Director-General (mainly the ESO Administration) is already in Garching, whereas the Scientific-Technical Group is still in Geneva, at CERN (European Organization for Nuclear Research), which since 1970 has been the host Organization of ESO's 3.6-m Telescope Project Division.

ESO has about 120 international staff members in Europe and Chile and about 150 local staff members in Santiago and on La Silla. In addition, there are a number of fellows and scientific associates.

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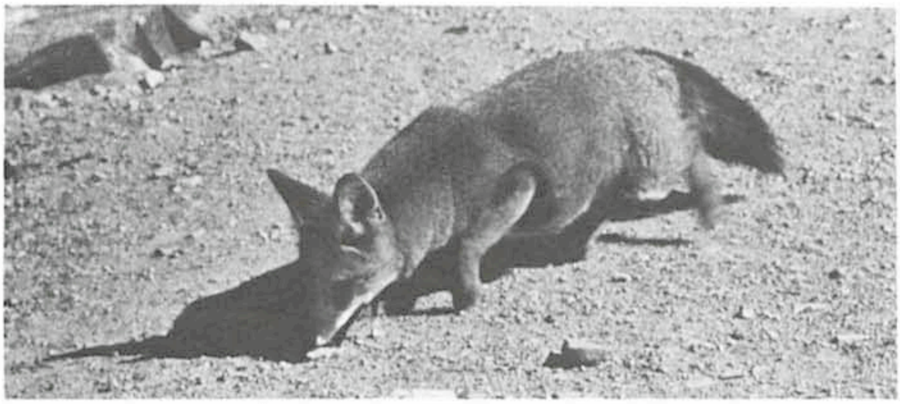

ESO photographer B. Dumoulin made this photo of one of the elusive La Silla foxes near "Casa Laustsen". Attracted by a delicious tidbit it came forward from its hide among the stones and rocks on La Silla. The suspiciously voluminous middle part of its small body seems to indicate that this particular fox has learned to supplement its meager natural food sources in the desert by other methods ...

B. Dumoulin, fotógrafo de la ESO, ha tomado esta fotografía de uno de los evasivos zorros cerca de la "Casa Laustsen". Atraído por un delicioso bocado ha salido de su guarida entre las piedras y rocas en La Silla. La sospechosa voluminosa parte media de su pequeño cuerpo parece indicar que este zorro en particular ha aprendido a suplir sus pobres fuentes naturales de alimentación en el desierto por otros métodos ...

ALGUNOS RESUMENES

Luz verde para la sede europea de ESO

Se ha dado un paso importante hacia la construcción de la sede europea de ESO en Garching. El Grupo de Trabajo creado por el Consejo para tratar con la planificación de la sede ha aprobado los planos presentados por los arquitectos, y se espera que la construcción comenzará a principios del año 1978.

El edificio, que deberá estar terminado en la segunda parte del año 1979, reunirá entonces todas las actividades europeas que actualmente se desempeñan en Ginebra y en Garching.

Un modelo del edificio, presentado en la página 17 de esta edición, dará una idea a nuestros lectores del futuro aspecto de la sede europea de ESO. La vista fue tomada de la parte posterior del edificio y no muestra la entrada principal.

El redescubrimiento de Adonis

Recientemente el telescopio Schmidt de 1 metro de ESO ha desempeñado un papel importante en el exitoso redescubrimiento de un planeta menor largamente perdido.

Hace 41 años el Dr. E. J. Delporte del Observatorio Uccle en Bélgica anunciaba el descubrimiento de un pequeño planeta (1936 CA) de movimientos rápidos poco usuales. Fue bautizado *Adonis*, y, a pesar de que su brillo disminuía rápidamente, fue posible seguirlo durante dos meses con el reflector de 100 pulgadas en el Monte Wilson, justamente encima de Los Angeles.

Como ésto normalmente no es suficiente para establecer órbitas exactas de planetas menores, muy pronto fue ubicado en la lista de "planetas probablemente perdidos".

Dr. Brian Marsden del Observatorio Smithsonian, quien posee uno de los mejores programas de computación para la determinación de órbitas, no estaba tan seguro de ésto. Basándose en las relativamente escasas observaciones computó la órbita del planeta menor—tomando en consideración la influencia de gravitación de los nueve planetas—y fue capaz de predecir que él se acercaría considerablemente a la Tierra a principios de 1977.

En noviembre de 1976, Dr. Marsden dio la alerta a los telescopios Schmidt ubicados alrededor del mundo y les pidió buscar a Adonis. No fue premiada la búsqueda del astrónomo de ESO H.-E. Schuster con el telescopio Schmidt durante dos noches en el mes de enero. Una búsqueda similar efectuada por el astrónomo Charles Kowal del Observatorio Palomar tuvo más éxito. En una placa tomada el 16 de febrero encontró un pequeño planeta que parecía moverse en la dirección esperada para Adonis. Cuando ESO fue informada del posible descubrimiento de Adonis, se tomaron placas con el telescopio Schmidt y el objeto fue rápidamente encontrado. Pudo ser fotografiado durante cinco noches consecutivas, proporcionándose cinco posiciones vitales que probaban definitivamente que Adonis había finalmente sido redescubierto.

Arriendo de las oficinas de ESO en Santiago a Naciones Unidas

Ha sido firmado un contrato de arriendo entre ESO y las Naciones Unidas para arrendar las oficinas desocupadas, el antiguo astro-taller y parte de la bodega en el edificio principal de ESO en Vitacura.

El espacio arrendado por las Naciones Unidas se ha desocupado luego que la mayoría de los servicios de ESO habían sido trasladados desde Santiago a La Silla. El traslado al lugar del observatorio forma parte de la reorganización de ESO en Chile, iniciada en el año 1975 a fin de asegurar un mejor funcionamiento del observatorio. Actualmente ESO sólo ocupa algunas oficinas y parte de la bodega en el sótano del edificio principal en Vitacura.