

EUROPEAN SOUTHERN
OBSERVATORY



ANNUAL REPORT
1966

Organisation Européenne pour des Recherches Astronomiques
dans l'Hémisphère Austral

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Hamburg-Bergedorf
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A. INTRODUCTION

The year 1966 was of particular importance for our Organization. After the road from Pelicano to La Silla had been completed early in the year and since the engineering design of the first building stage (cf. Ann. Rep. 1964, p. 12) was completed, all building contracts concerning this stage of our building activity could be concluded. The construction of the water and power supply began and ended during the year. The construction of the instrument buildings, the hostel, and the heating plant on La Silla started in August. The construction of the headquarters building will begin early 1967. The optical and mechanical design of the 3.5 m Telescope was advanced sufficiently to allow some important parts of the preliminary design of the second building stage, which will be mostly concerned with the 3.5 m Telescope, to be furthered considerably.

Finally, the astronomical observing activity was started late in November, after the 1 m Photometric Telescope had been installed in a provisional building.

The following report describes the complex activities of the Organization during 1966. References to the Annual Reports of 1964 and 1965 are made frequently in order to avoid recapitulation.

The members of the ESO Council had long since felt the need to see the various locations of ESO's activity in Chile, not unnaturally finding it more and more difficult to judge situations and local problems which they did not know personally. They therefore decided to travel to Chile, arriving there before 22 March and visiting during the following days La Serena, the Elqui Valley, La Silla, and Tololo. They saw the vicinity of Santiago and Valparaíso, and were received in special audience by H. E. the President of the Republic of Chile, Sr. E. Frei Montalva. On 31 March and 1 April they had official sessions in the ESO Guest House in Vitacura.

B. LEGAL MATTERS

The essential legal matters dealt with were as follows:

Tax exemption of the ESO territories around La Silla, in La Serena and in Santiago was finally settled.

The procedure of obtaining the final permit for the constructions on La Silla has been started with the help of the Ministerio de Obras Públicas. The plans for the Headquarters in Vitacura were given to the Municipalidad de Las Condes in December. Their approval is expected early in 1967.

The provisional water rights in the Quebrada Pelicano were obtained; approval of the definite plans has been applied for.

As the need for a rapid communication system between Santiago, La Serena and La Silla was being increasingly felt, permission was requested to operate a short wave radio system giving direct links between Santiago and the places in the north of the country. Provisional permission was given in November.

Various contracts for the works at La Silla and in Santiago were prepared by our Consulting Engineers together with our lawyers. They were signed in March, June, July and December respectively. They cover the whole first stage of our building program (cf. Sect. C).

The establishment of ESO's mining rights in the area of La Silla was delayed by the inexact work of a surveyor. Damage to our legal position, however, could be prevented. The survey work will be completed in 1967. The supplementary convention between the Chilean Government and our Organization with the aim of protecting ESO's scientific activity against interference from new mining interests was signed late in March. Although the Mining Commission of Parliament gave its approval unanimously, ratification by the Chilean Parliament was delayed because of other urgent legislative tasks. The same applies to the corresponding change in Art. 17 of the Chilean Mining Law (cf. Ann. Rep. 1965, B 4).

Further negotiations with the Ministerio de Relaciones Exteriores cleared the applicability of the Chilean social and labour laws to Chilean nationals employed by ESO.

C. BUILDING ACTIVITY

1. Purchase of Materials in Europe

Availability of building materials in Chile is not comparable to that in Europe, and the prices of many materials are much higher. Considerable quantities of materials had therefore to be bought in Europe. They were transported to Chile and stored partly in Camp Pelicano, partly in the construction area proper. In purchasing these materials, ESO had to employ a specialist with much experience in general trade and shipping matters. On the whole, the arrangement meets our requirements.

2. Road Construction

Construction of the road between Camp Pelicano and La Silla was finished in January, and the inauguration took place in the presence of the Council and of many invited guests on 24 March.

The length of the road is 20 km, the maximum gradient is 12%, the minimum radius of the curves is 20 m, the average width 5 m with a sufficient number of passing points.

The road has stood up without damage to the rains and snow in 1966. It will be given an asphalt surfacing later when the heavy traffic of the construction period has ended.

It was decided to purchase a heavy vibratory road compacter, a grader, and a water-spraying tank truck in order to do the necessary maintenance work under our own administration.

3. Power and Water Supply

ESO had the choice of either using public power supply or to install its own power station. The first alternative would have required the construction of a high-tension line of 40 km length in order to bring the power to our area. Together with the charges for the 300 kVA needed in the later stages of the project, the cost would be higher than for the second alternative of installing our own power station. It was decided, therefore, to construct this station near Camp Pelicano close to the beginning of the road.

The first of three 115 kVA diesel generators with compressors from the Swedish firm ASEA was installed late in 1966; the others will follow in 1967 and 1968.

During the year, the provisional installation (cf. Ann. Rep. 1965, p. 7) had to be used normally.

The generator current of 380/220 V is transformed into 6000 V and transmitted to La Silla by an aluminum cable of 16 km length on wooden poles. On La Silla the voltage is stepped down again and distributed to the various buildings.

In four of the boreholes mentioned in Ann. Rep. 1965, p. 7, deep well pumps were installed which work successively, each lowering the momentary water level only by a preset and comparatively small amount, thus diminishing the danger of exhausting one of the boreholes. The water is brought to the first tank, after which it is filtered.

Water is transported from 1000 m (Camp Pelicano) to 2400 m (second summit of La Silla) through a steel pipeline 13 km long and 5 cm bore by 3 high-pressure pumps (65 atm. each) arranged in series at 1000 m, 1500 m and 1950 m altitude. Though the danger of frost damage is not acute, the line was laid about 60 cm below ground wherever this was possible without blasting.

Early in 1967, after the wells in Quebrada Pelicano have been equipped with level recorders, an exact check on water consumption will be possible. Late in 1966, there was evidence that the daily consumption of 80 m³ caused by the general construction activity in the whole area was not showing any exhaustive effect on the wells.

The buildings of the pumping stations and the power plant were erected by the Chilean contractors Ovalle, Moore y Cía. Ltda., Santiago. They also installed both the power and the water lines, pumps and generator, partly assisted by Swedish specialists. Only very minor details were not yet finished by the end of the year.

It should be mentioned that the poles of the high-tension line also carry the telephone cable between Camp Pelicano and La Silla.

4. Camps

The permanent staff of ESO, labourers and employees who supervise, run, and maintain the whole installation, are accommodated in the lower camp

in the Quebrada Pelicano. Also living there are personnel for the storehouse with the large storage area for building materials and equipment, and the craftsmen for the mechanical workshop, the carpenter's shop, also the car park and gasoline station attendants. In addition, the camp has a cookhouse with two dining rooms, and a guest house. The boss of both the lower and the upper camp has his office in Camp Pelicano.

The upper camp on La Silla contains the superintendent's office, the office of the ESO construction manager, a construction laboratory, and a canteen with kitchen and dining room. It accommodates provisionally astronomers and the personnel of the meteorological service. It allows engineers and other specialists to live next to the construction works if necessary. It provides for accommodation of the auxiliary personnel: cooks, servants and drivers.

The camp in Quebrada Pelicano will be a permanent installation, which cannot yet be said about the camp on La Silla.

Both camps were completed in 1966. It is, however, quite possible that in the near future some units of a labour camp near km 13 of the road which was built for the roadwork and supply line contractors will be moved to Camp Pelicano and La Silla where they would serve our purposes much better than at the present site.

5. Buildings on La Silla

During its spring meeting in Santiago, the Council had to reduce somewhat the first stage of the building program for financial reasons. The dormitory, the administration building, and the definitive workshop had to be postponed temporarily. If the 14 units of the hostel do not suffice, the La Silla camp is still available; the prefabricated building of the supervising consultants could serve later for the administration. The steel shelter of the provisional workshop could be improved to meet most requirements of a permanent workshop.

The design of the main buildings, detailed completely and laid down in a voluminous set of tender documents, was ready for tendering in March. Of the offers received, the most favourable came from the firm of TESCA, Santiago. The contract, after approval by the Finance Committee, was awarded to them on 17 March for the construction of the following items: the buildings of the photometric, spectrographic, and Schmidt telescopes (cf. Fig. 6-17 of Ann. Rep. 1965), the hostel (cf. Fig. 18 of Ann. Rep. 1965), and the heating plant. They also have to furnish all supply lines with the complete electrical and sanitary installations. They plan to complete the work in 14 months.

A considerable amount of rock blasting was necessary before construction could start. Late in 1966, the foundations for the instrument buildings were finished, the wood and steel work for the concrete structures was proceeding fast. The excavations for the hostel were just finished, so that the concrete work could begin.

Summarizing the state of the project on and near La Silla, it can be said that road, electricity and water supplies, permanent camp in Quebrada Pelicano, camp on La Silla, office, and workshop have been completed. The instrument buildings are 30 per cent finished and the excavations for the hostel were completed. The regular maintenance for all the finished works has started.

6. Headquarters Building in Santiago

During the first half of the year all design details of the headquarters building in Santiago-Vitacura were fixed within the framework of the preliminary design approved by the Working Group for Buildings and the Council.

On 21 September 1966 tendering took place and on 17 December the contract was awarded to the Chilean firm of DESCO, Santiago. The works are scheduled to start in January 1967. The site had been prepared during 1966.

D. FUTURE CONSTRUCTIONS AND INSTALLATIONS

1. Road to Summit and Building for 3.5 m Telescope

In order to provide the 3.5 m telescope with its building and dome in good time, their preliminary design was started in 1966. The first drafts of the building were discussed by the Instrumentation Committee, the Working Group for Buildings, and the Management.

At its meeting on 21 and 22 November, the Council accepted the proposal of the Management and the Finance Committee to seek a consulting firm in or near Hamburg, i. e., within easy reach of the ESO Office, for the design of the large telescope building. Negotiations with various consulting firms were going on at the end of the year.

It soon became apparent that the building details cannot be settled completely without taking into account the conditions on the main summit of La Silla where the instrument has to be erected. Quite an amount of blasting will certainly be necessary to prepare the site for the two independent foundations, one for the instrument with its spectrographs and the other for the building, supporting the various floors and the dome. The blasting should be restricted to a minimum in order not to spoil unnecessarily the upowering effect of the summit which, as experience suggests, will contribute much to diminishing the thermal turbulence caused by the immediate surroundings.

The next work to be done is therefore the exact surveying of the top area and the routing of the access road. Both are planned for early 1967. The road should be routed in such a way that the second summit and the south shoulder can easily be reached. Both may be important for future installations, the second summit for some meteorological masts, the shoulder for astronomical instruments not yet specified.

2. Communication System

a) Although the small radio equipment installed in 1965 was quite satisfactory as a connection between La Silla and — via Coquimbo — La Serena, it has nevertheless become necessary to have a regular, completely reliable connection between both places in the north and Santiago. This can be established with a short-wave radio telephone system, the wave-length of which has to be granted by the Chilean authorities. The provisional permit was given in autumn 1966 and the equipment was ordered from Collins Radio Co., International Division, Dallas, Texas. This system with a relay station on Cerro Calán near Santiago will be installed early in 1967. ESO gratefully acknowledges the permission given by the Observatorio Astronómico Nacional for the establishment of the relay station.

b) Besides the above-mentioned system, the negotiations with the Empresa Nacional de Telecomunicaciones (ENTEL) (cf. Ann. Rep. 1965, p. 9) were continued. Their experiments with ultra short waves showed the mountain of La Silla to be excellent for their purpose. Careful inquiries among competent astronomers seem to indicate that electrical disturbances in photoelectric equipment of high sensitivity are not very probable and that, if ever they occur, the equipment can be shielded from their effects either at the antennae or at the telescopes.

Nevertheless, the draft contract to be signed with ENTEL includes the possibility of removing their equipment completely if ESO can prove that it spoils the observational work. It seems possible that the contract can be signed early in 1967.

When the ENTEL system is working normally, ESO will have radio telephone and radio telex connections between La Silla, La Serena and Santiago.

E. DOMES

Now that the firm of Seibert Sécometal, Saarbrücken — Paris, has been entrusted with the design, construction and assembling of the domes for the photometric, spectrographic, and Schmidt telescopes, they have worked out in close collaboration with the astronomers of the Management the design details of these domes. The three domes will have inner diameters of 9, 12 and 13 m respectively and will be of the most modern construction: an outer casing of 6 mm welded self-supporting steel plate, an inner sheathing of an 80 mm insulating material and between the two a free space at the base and at the top of the dome in direct communication with the outer air.

The construction work was started in mid-1966, and the dome for the spectrographic telescope was almost finished in the factory at the end of the year. It is planned to ship this dome to Chile in spring 1967; the two other domes will then follow at short intervals.

On account of the thorough knowledge of domes which Seibert Sécometal has acquired during design and construction of the 9, 12 and 13 m ESO domes, this firm has also been entrusted with the preliminary design of the dome for the large ESO telescope. After this has been completed, an invitation to tender for construction and assembly of the dome will be issued in all the ESO countries.

F. INSTRUMENTS

a) The Prism Astrolabe

In June, ESO installed at the Observatorio Astronómico Nacional on Cerro Calán an integrating chronograph by Ebauches, Neuchâtel. This supersedes the chronograph kindly provided by the Observatorio Nacional. This new instrument has worked satisfactorily since it was put into operation. In the Astrolabe building a mercury barometer and a thermograph were installed.

b) The Objective Prism Astrograph

After the astronomical observations at the Zeekoegat Station had been finished at the end of 1965, the astrograph was dismantled under the supervision of A. Baranne from the Marseille Observatory. The mechanical parts of the telescope were sent to Chile, where they were stored for the rest of the year. The optical parts were taken to France for overhaul. It is planned to assemble the astrograph and resume observation work on La Silla during the second half of 1967.

The Zeekoegat Station, apart from the telescope, was sold by ESO in February to the French CNRS (Centre National de la Recherche Scientifique).

c) The Photometric Telescope

In order to make the instrument available for astronomical work prior to completion of its final building, it was decided to erect the telescope in a provisional structure. An 8 m dome with a 3 m high steel substructure was ordered from the firm of Astro-Dome in Canton, Ohio, U.S.A. After some lengthy discussions it was erected on La Silla on a concrete slab N-W of the building for the spectrographic telescope. The main parts of the telescope itself were assembled in this provisional building by the ESO Astronomy Department under difficult conditions. The completion of the telescope including its wiring and that of the control cabinet was performed by B. G. Hooghoudt, the designer of the telescope, and M. J. van Middelkoop of the firm of Rademakers, Rotterdam, during the second half of October and the first weeks of November.

The telescope is surrounded by a wooden platform which allows easy and simple access to the eyepiece.

In November, J. Borgman of Groningen installed at the Cassegrain focus a minor photoelectric photometer kindly lent to ESO by the Kapteyn Observatory in Roden, Holland. The more ambitious photoelectric photometer built for ESO in the workshop of the Kapteyn Laboratory will be installed during 1967. A full description of the instrument is given in ESO Bulletin No. 1. Unfortunately, the drive of the telescope did not work properly, so that the first observations were sometimes seriously disturbed.

d) The Spectrographic Telescope

During 1966, the firm of Réosc, Paris, finished the mechanical parts of the telescope including its control cabinet. The figuring of the main mirror was almost finished at the end of the year; the figuring of the secondary mirrors was started during the year. The work on the large coudé spectrograph for the telescope is well advanced. According to plan, the telescope will be installed on La Silla during the second half of 1967.

e) The Schmidt Telescope

The design of the mechanical parts of the Schmidt telescope by W. Strewinski continued during the year.

The disc of the Duran 50 glass for the main mirror of the telescope was delivered by the firm of Schott, Mainz, in January and transported to Zeiss, Oberkochen. The figuring of the mirror by Zeiss was started immediately, but the disc proved to be a failure. Fortunately another disc could be delivered by Schott with only a short delay.

The disc of the UK 50 glass for the Schmidt correction plate was delivered by Schott to Zeiss in March.

Work by Zeiss on the optics for the telescope was well advanced at the end of the year.

The delivery of an objective prism could not be settled definitely during the year.

f) The 3.5 m Telescope

The work of the Instrumentation Committee during the year has mainly been concentrated on the design of the large telescope.

The focal ratios of the three foci of the modified Ritchey-Chrétien optics have definitely been fixed at $1/3$, $1/8$ and $1/30$.

The 3.5 m disc of fused silica for the main mirror ordered from the firm of Corning Glass International, U.S.A., was under manufacture during the year. The finished disc is expected to be ready for inspection by ESO in February 1967.

The silica discs for the secondary mirrors have been ordered from the firm of Heraeus-Schott, Hanau, Germany.

Negotiations with optical firms for the figuring of the optics for the telescope went on during most of the year. Upon the recommendation of the Instrumentation Committee and the Finance Committee, the ESO Council at its meeting on 21 and 22 November decided that a contract for the figuring should be discussed with the firm of Réosc in Paris; negotiations were going on at the end of the year.

As the figuring of the mirrors and the problem of the support systems of the mirrors are intimately connected, the design and manufacture of the mirror cells will also be entrusted to the optical firm. An experimental study of the support system for the main mirror of the telescope has been made by the firm of Réosc on behalf of ESO. On account of the good results obtained, we are inclined, under the assumption that the figuring will be done by Réosc, to accept a classical counterweight system for the back support and a new system, developed by Réosc and consisting of 21 air bags with automatically regulated pressure, for the edge support.

g) Auxiliaries for Evaluations and Measurements

The equipment of the Headquarters in Santiago and the Telescope Site on La Silla with auxiliary instruments for evaluating and measuring astronomical photographic plates has been further discussed by the Instrumentation Committee and the astronomers of the Management. Several experts in this field among astronomers of the ESO countries have been approached for advice, and a number of instruments firms have been requested to give quotations. A definitive proposal for equipment is being worked out by the Management comprising a fairly complete set of auxiliaries for the Headquarters and a limited number of basic auxiliaries for the Telescope Site.

The auxiliary equipment for La Silla will be modern, but comparatively simple because it should serve principally for inspection of the material gained during the nights. The equipment for the Headquarters, however, should be fully digitized in order to make it immediately suitable for use with electronic computers.

h) Aluminizing Plant

After thorough negotiations with several European firms, Edwards High Vacuum Ltd., Crawley, Sussex, England, was entrusted with the task of designing and constructing a 2 m aluminizing plant for the mirrors of the photometric, spectrographic, and Schmidt telescopes. The aluminizing plant was finished and ready for delivery at the end of the year, and will be inspected by ESO at the beginning of 1967. It will be installed in a special aluminizing room in the ground floor of the building for the spectrographic telescope.

Preliminary negotiations with European firms on the design and construction of an aluminizing plant for the main mirror of the large ESO telescope commenced during the year.

G. SCIENTIFIC ACTIVITY

1. Meteorology

The complete meteorological results of La Silla during 1966 will appear in a forthcoming number of the ESO Bulletin.

Generally speaking, meteorological conditions turned out to be very good. Exceptionally good weather was experienced during January, February, March, November and December. The results of the other months were much better than in 1965. As a matter of interest, 87 of the total of 90 nights in January, February and March were clear. Similar long series of consecutive clear nights occurred at the end of the year.

A 24 m high meteorological mast was installed in the second half of the year and has been in regular use since. It is equipped with six thermocouples attached at intervals of 4 metres in order to measure the micro-turbulence as a function of height above ground level.

2. Seeing Investigations

It must be mentioned and is gratefully acknowledged that CARSO (Carnegie Southern Observatory) with the ready consent of its Director, H. W. Babcock, has installed an Automatic Seeing Monitor (ASM) on the saddle between the two summits of La Silla. There the instrument, watched by two CARSO observers, registers the optical turbulence of the atmosphere. Since an identical instrument works on Cerro Morado, south of Tololo in the AURA area, ESO is now collecting data on the relative seeing conditions on La Silla and Morado fully automatically. The series of observations are, however, not yet long enough to draw definite conclusions. If there are significant differences at all, they seem to be small. At any rate, the turbulence seems to be between $1/2$ and $1/3$ of that known at the big Californian observatories.

3. Astronomical Observations

a) Prism Astrolabe

According to the agreement between ESO and the Universidad de Chile (cf. Ann. Rep. 1965, p. 10), the observational program for the prism astrolabe at the Observatorio Astronómico Nacional on Cerro Calán progressed throughout 1966.

Until the end of the year more than 12,000 star transits were observed by three Chilean observers: K. Czuia, P. Guerra, and F. Noël. The first chain of observations of 11 fundamental groups of FK4 stars covering the whole right ascension system was completed. It is expected to have preliminary results concerning this first chain during 1967. Systematic errors of the catalogue system seem to be clearly indicated.

During September and October, the chief of the astrolabe group on Cerro Calán, F. Noël, stayed at the Paris Observatory at the invitation of ESO

in order to get acquainted with the work done under the supervision of B. Guinot. He also visited the Observatories of Hamburg, Haute Provence, Pulkovo, and the Max Planck Institute for Astrophysics in Munich. On his return to Chile he visited the U.S. Naval Observatory in Washington.

b) Photometric Telescope

The first observations made by Borgman at the photometric telescope combined with the Roden photometer gave values for the atmospheric extinction which indicated a high transparency of the atmosphere on La Silla.

In December, the first visiting astronomer, J. P. Brunet from the Marseille Observatory, arrived at La Silla to initiate a photoelectric program of observations on stars in the Magellanic Clouds.

4. Roden Symposium

In February 1966 a symposium on photometry was sponsored by ESO and held in Roden near Groningen, Holland. Its purpose was to inform young astronomers from the ESO countries about ESO in general, about the 1 m telescope and its auxiliary equipment, and about current work in the field.

A report on the symposium will be found in the ESO Bulletin No. 1.

5. Publications and Library

During the year there appeared ESO Communication No. 7:

Duflot et Fehrenbach: Détermination de la rotation des Nuages de Magellan à l'aide du prisme-objectif, 1966, C.R.Acad.Sci. Paris **264**, 210-213

and the ESO Annual Report for 1965.

The manuscript of the first number of the ESO Bulletin went to the printer's in November.

Besides the purchase of journals and books for the future libraries on La Silla and at the headquarters in Santiago, the equipment of the headquarters library with steel shelves was discussed by the Management.

H. ORGANIZATION

1. Office of the Director

R. Plentl, after having worked for 5 months in the Director's Office in Hamburg, was transferred to Chile to assume his post of administrator as from 1 January 1966.

On 1 February 1966, F. Dossin, former assistant to P. Swings, Liège, Belgium, was added to the staff as astronomer. His special task is to assist

the management with instrumental problems, in particular with the development, design and construction of the 3.5 m telescope.

Owing to the fact that much building material had to be purchased in Europe and shipped to Chile (cf. C. 1.), J. Meuser entered the Office of the Director as a purchasing and shipping specialist to take over the new task, and on 1 March 1966 a secretary typist to J. Meuser, Chr. Sachs, had to be added to the staff. The assistant accountant and office assistant, H. Schmidt, left the office on 1 June 1966. She was temporarily replaced by K. Lass who left on 31 October 1966.

2. Organization in Chile

Under the general supervision of A. B. Muller, ESO's activities are grouped in three departments (cf. Ann. Rep. 1965, p. 14): Administration, Construction and Maintenance, Astronomy and Meteorology. The first under R. Plentl, the second under H. O. Voigt, and the third under A. B. Muller.

a) Administration

During 1966 ESO's administration had to be adapted to the growing tasks. The main office was set up in Santiago where the bookkeeping is now centralized. It also handles financial and legal matters, more important purchases, and deals with suppliers or their representatives, with contractors, consulting engineers and various authorities. The guest house is also managed from there. In 1966 three rooms of the guest house were used as offices of the administration and two for the technical department.

The La Serena Office has to deal with the many purchases for the day-to-day supply of goods for the camps. Unloading, customs clearance, and transport of imported goods and materials are handled there owing to the vicinity of the harbour of Coquimbo.

The La Serena Office deals also with the pay-roll, social matters, medical care of the personnel. It maintains liaison with the labour authorities, and is responsible for looking after visiting astronomers.

The radio service transmits messages between La Silla and La Serena and vice versa.

In La Serena, ESO has rented a garage with a service pit and a washing facility where our vehicles can be cleaned and, if necessary, repaired. The garage can also be used for storing imported and locally purchased goods before they are reloaded and transported to the camps.

The two camps at Pelicano and La Silla are under the supervision of the camp administrator ("camp boss") who takes care of board, lodging and discipline. He is also responsible for the coordination of otherwise independent sections, such as the bodega, the transport section, and the radio, which work usually under their respective section heads.

The general services, such as doorkeepers, watchmen, servants, kitchen staff, and stable-boys are directly controlled by the camp administrator. The stable-boys have to take care of a few horses and mules which are still necessary in spite of the existence of the mountain road. Vast parts of the ESO terrain must be patrolled on horse-back in order to keep out charcoái burners, donkeys and goats, all of them being very detrimental to all sorts of plant life.

The general services include two kitchens, one at Pelícano, and one on La Silla, with continuous service, their pantries normally containing supplies for one month. Part of the kitchen staff have to work in shifts to ensure a continuous service.

The bodega consists now of two sheds 10 m × 30 m and a large fenced square where all goods are checked, stored and handed out to consumers.

The transport section has at its disposal 11 vehicles (3 heavy trucks, 3 light trucks and 5 cars) with 9 drivers. It takes care of the regular connections between La Serena, Pelícano, and La Silla and provides transport upon request. The section has a workshop for smaller repairs, but it will have to be equipped for heavier duties in the near future.

The operators of the radio section not only maintain the connections La Silla-Pelícano and La Silla-La Serena via Coquimbo, but attend at the same time to the local networks on La Silla (6 telephones) and Pelícano (9 telephones) during office hours.

For spare time pursuits there is a small library with English and Spanish books, 2 table-tennis sets, a football field, and various games (chess, dominoes, etc.).

b) Construction and Maintenance

The technical department under the assistant director, H. O. Voigt, has various tasks in the La Silla area:

- 1) Control of the extensive and sometimes complicated new constructions which are under the detailed supervision of the Consulting Engineers and their staff;
- 2) Maintenance of buildings (at present mainly camp buildings) and roads, water and power supplies;
- 3) Refuse removal.

No payment to the contractor is permitted which has not been checked by the Consulting Engineers and our supervising engineer.

The same engineer is responsible for maintenance, and controls squads of masons, carpenters and gasfitters. The road maintenance squad has some heavy machinery at its disposal (grader, caterpillar, roller, watertank). It has to work for a few days of every month only and is therefore composed of workmen recruited temporarily from other squads.

Refuse is collected in the two camps in old oil tanks which are emptied at a place about 1 km downward from Camp Pelicano where the refuse is then covered with soil. In the near future an incinerator will be available on La Silla.

During 1966 in the headquarters area in Santiago-Vitacura the technical department had to deal only with the preparation for the construction work which is to start early 1967. Here the department will have controlling functions only, as maintenance will begin later. The detailed supervision of the contractor is again in the hands of the Consulting Engineers.

c) Astronomy and Meteorology

A. B. Muller, the superintendent of our whole project in Chile, is more especially the head of the astronomy department. In 1966 the main task was the erection of an 8 m dome and in it the provisional installation of the 1 m photometric telescope. This and the permanent meteorological service could only be carried out with the assistance of the mechanical workshop. The department planned to extend the regular meteorological observations on the main summit of La Silla to thermoelectric measurements of temperature fluctuations and optical measurements of the atmospheric turbulence with a Danjon 10" telescope which had been used in South Africa. By the end of the year, however, the mounting of the instruments had not yet begun. It is probable that they will finally work on the second summit because road construction and site preparation for the large instrument on the main summit will presumably start in 1967. It is clear that the astronomy department is in a very early stage and that it will have to grow considerably during the next years.

3. Marseille

No changes occurred in the office of the chairman of the Instrumentation Committee.

4. Zeekoegat

As mentioned under F. Instruments, b), the activities of this station have been terminated. Mr. and Mrs. Petit and Mr. and Mrs. Kaufmann have returned to Europe.

I. ESTIMATED AND ACTUAL EXPENDITURE

Due to various changes in the over-all program, the total estimated investment till 1970 required amendment. The 1966 budget also had to be revised, as the program had fallen behind schedule.

The figures are now as follows:

Budget Items	Total Budget up to 31. 12. 1970	Revised Budget 1966	Expenditure 1966
Amounts in 1000 US \$			
I. Capital Expenditure			
A. Land, Buildings, Roads	6 955	1 402	1 411
B. Instruments	8 186	962	854
C. Consultants and Architects	1 225	292	299
II. General and Overhead Expenses	4 475	598	592
III. Astronomical and Meteorological Activity South Africa	501	—	—
Unforeseen	202	39	6
TOTAL BUDGET CONSTRUCTION	21 544	3 293	3 162
IV. Astronomical and Meteorological Activity Chile	520*	55*	55
V. Maintenance Roads, Buildings and Instruments	146*	46	46
TOTAL BUDGET INCLUDING EXPLOITATION	22 210	3 394	3 263

* The difference between these amounts and those shown in the Annual Report for 1965 is caused by the fact that all amounts for salaries and wages are now grouped under heading II — General and Overhead Expenses.

The total expenditure up to 31 December 1966 can be summarized as follows:

Budget Items	Total Expenditure up to 31. 12. 1966
Amounts in 1000 US \$	
I. Capital Expenditure	
A. Land, Buildings, Roads	2 466
B. Instruments	1 647
C. Consultants and Architects	747
II. General and Overhead Expenses	1 315
III. Astronomical and Meteorological Activity South Africa	501
Unforeseen	36
TOTAL EXPENDITURE CONSTRUCTION	6 712
IV. Astronomical and Meteorological Activity Chile	85
V. Maintenance Roads, Buildings and Instruments	46
TOTAL EXPENDITURE	6 843

The total budget for 1967 has been fixed at US \$ 3.796.000, detailed as follows:

Budget Items Amounts in 1000 US \$	Budget 1967
I. Capital Expenditure	
A. Land, Buildings, Roads	1 867
B. Instruments	934
C. Consultants and Architects	217
TOTAL CAPITAL EXPENDITURE	<u>3 018</u>
II. General and Overhead Expenses	668
III. —	—
IV. Astronomical and Meteorological Activity Chile	70
V. Maintenance Roads, Buildings and Instruments	10
Unforeseen	30
TOTAL BUDGET 1967	<u><u>3 796</u></u>

Hamburg-Bergedorf, April 1967

O. Heckmann

K. APPENDICES

1. Members of the ESO Council during 1966

Belgium:	A. G. Velghe M. Deloz
France:	Ch. Fehrenbach R. Poussard
Federal Republic of Germany:	H. H. Voigt K. F. Scheidemann
The Netherlands:	J. H. Oort J. H. Bannier
Sweden:	C. Schalén G. Funke (President)

M e e t i n g s :

1 April 1966 in Santiago.

21 and 22 November 1966 in Hamburg.

2. Members of the ESO Committees and Working Groups as at 31 December 1966

ESO Finance Committee

Belgium:	M. Deloz
France:	J. Bourreau
Federal Republic of Germany:	W. Paulig
The Netherlands:	J. H. Bannier (Chairman)
Sweden:	B. Samuelsson

M e e t i n g s :

31 March 1966 in Santiago.

28 June 1966 in Hamburg.

15 November 1966 in Hamburg.

ESO Instrumentation Committee

Belgium:	R. Coutrez M. V. Migeotte L. Neven
France:	A. Couder G. Courtès Ch. Fehrenbach (Chairman)
Federal Republic of Germany:	A. Behr
The Netherlands:	Th. Walraven
Sweden:	A. Wallenquist

M e e t i n g s :

18 January 1966 in Paris.

26 and 27 May 1966 in Observatoire Haute Provence.

12 October 1966 in Paris.

23 November 1966 in Hamburg.

ESO Sub-Committee for Spectrographs

Belgium:	M. V. Migeotte
France:	R. Bouigue M. Bretz Ch. Fehrenbach (Chairman)
Federal Republic of Germany:	H. H. Voigt P. Wellmann
The Netherlands:	A. B. Underhill
Sweden:	B. Edlén (Consultant) Y. Ohman (Consultant)
U.S.A.:	I. S. Bowen (Consultant)

M e e t i n g s :

19 January 1966 in Paris.

13 October 1966 in Paris.

ESO Working Group for Buildings

Belgium:	J. Dommangeat
France:	P. Lacroute
Federal Republic of Germany:	O. Heckmann (Chairman)
The Netherlands:	A. Blaauw
Sweden:	E. B. Holmberg
Denmark:	A. Reiz

M e e t i n g :

23 November 1966 in Hamburg.

ESO Working Group for Preparing a Scientific Programs Committee

France:	R. Cayrel
Federal Republic of Germany:	O. Heckmann (Chairman)
The Netherlands:	A. Blaauw

M e e t i n g :

6 July 1966 in Groningen.

ESO Working Group for Colloquia

Belgium:	L. Neven L. Houziaux (Substitute)
France:	R. Cayrel
Federal Republic of Germany:	U. Haug T. Herczeg (Substitute) O. Heckmann (Chairman)
The Netherlands:	A. B. Underhill H. van Bueren (Substitute)
Sweden:	T. Elvius G. Larsson-Leander (Substitute)

ESO Committee for the Study of the Results of the Site Tests

Belgium:	J. Dommaget
France:	Ch. Fehrenbach J. Rösch (Chairman)
Federal Republic of Germany:	H. Scheffler
The Netherlands:	A. Blaauw
Sweden:	E. B. Holmberg

ESO Working Group for Publication Problems

Belgium:	A. G. Velghe
France:	P. Lacroute
Federal Republic of Germany:	O. Heckmann (Chairman) H. H. Voigt
Sweden:	G. Funke

3. Employees on Contract with ESO as at 31 December 1966

H a m b u r g O f f i c e :

O. H. L. Heckmann	Director
J. M. Ramberg	Assistant Director
J. Bloemkolk	Manager
F. Dossin	Astronomer
J. Meuser	Chief Purchasing and Shipping
H. W. Marck	Accountant
B. Wächter	Librarian
E. Görner	Secretary
G. A. M. Jacobse	Secretary
Ch. Sachs (as from 1. 3. 66)	Secretary

H. Schmidt (until 1. 6. 66)	Office Assistant
K. Lass (from 1. 7. — 31. 10. 66)	Office Assistant

Chile :

A. B. Muller	Superintendent
H. O. Voigt	Assistant Director for Construction
R. Plentl	Administrator
R. H. G. Holder	Resident Engineer
H. E. Schuster	Assistant Astronomer
H. J. Straatman	Assistant Administrator
J. Doornenbal	Mechanic
A. Bosker	Storekeeper

France :

O. Vincent	Secretary
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4. Local Staff and monthly paid Labour in Chile as at 31 December 1966

Astronomical Department :

A. Cuthbert T.	Secretary
J. Palisson B.	Meteorological Assistant
R. Cortés	Night Assistant
R. Vega	Night Assistant
A. Zúñiga	Night Assistant
B. Melys R.	Mechanic

Administration :

C. Euler	Secretary, Santiago
G. Pietropaolo	Office Boy
J. A. Briggs	Bookkeeping
W. Urbina	Driver
M. Rönnberg	Guest house
R. Riebl P.	Chief, Office La Serena
M. Felis K.	Secretary
A. Urquiza U.	Personnel
C. Herrera V.	Bookkeeping
L. Casoni B.	Chief Transport
A. Rozas L.	2nd Chief Transport
B. Piñeiro C.	Mechanic Transport Section
L. A. Ramos	Garage

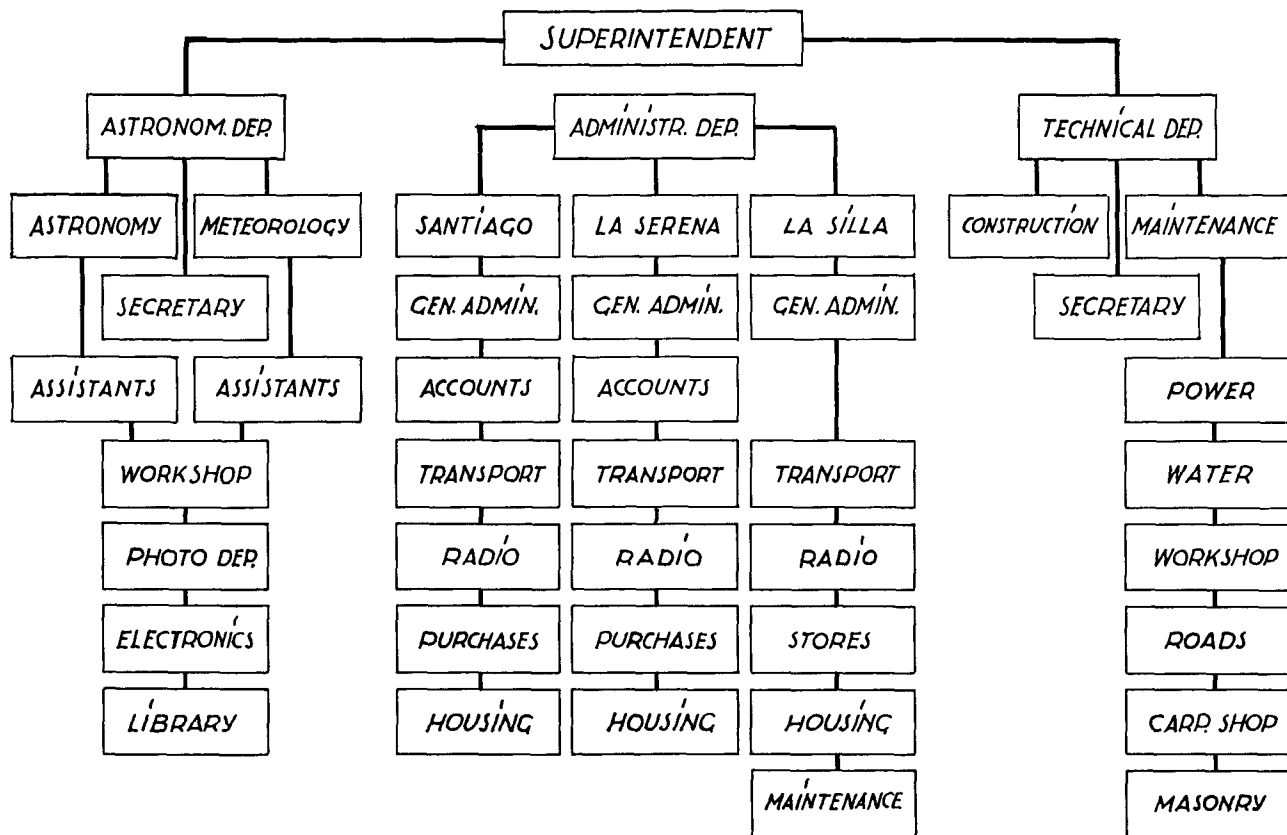
H. Perona	Radio
A. Foix	Imports
E. Figueroa G.	Purchasing
H. Carrasco P.	Administrator, La Silla
L. Avalos E.	Driver
J. Días A.	Driver
J. Mena H.	Driver
N. Navea Z.	Driver
J. Ponce A.	Driver
G. Prado P.	Driver
A. Anais R.	Driver
F. C. Gómez C.	Radio
P. Baquedano S.	Stores
J. Viera C.	Stores
H. Flores	Stores
S. Lazo	Waiter

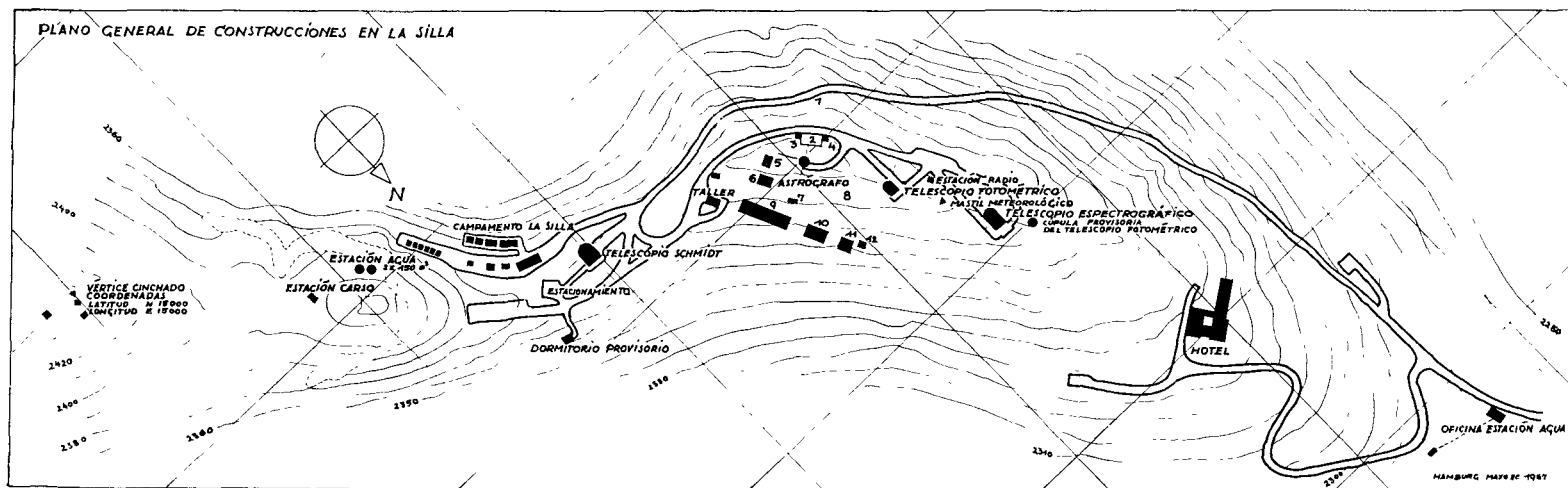
Technical Department:

A. Mondaca R.	Secretary
J. Rodríguez L.	Maintenance
F. Hering G.	Electrician
R. Valenzuela M.	Caterpillar
and 32 labourers	La Silla/La Serena
5 labourers	Santiago

ESO · CHILE INTERNAL ORGANIZATION

DECEMBER 1966





Instalaciones TECSA La Silla — TECSA Installations on La Silla

- | | |
|---|---|
| 1 Planta concreto — Concrete Plant | 7 Materiales de bodega — Stores materials |
| 2 Bodega — Store | 8 Carpintería — Carpenter's shop |
| 3 Oficina técnica — Technical Office | 9 Campamento obreros — Labourers camp |
| 4 Oficina jornales — Labour Office | 10 Casino — Dining room |
| 5 Banco enferradura — Steel bar bending bench | 11 Campamento empleados — Employees camp |
| 6 Perchas fierro — Steel bar rack | 12 Casa ingeniero — Engineer's house |

Fig. 1: Layout of ESO on La Silla

Fig. 2:
Camp Pelicano
(October 1966).



Fig. 3.: La Silla (October 1966). Day-Sleepers Hut, foreground.
Site of Schmidt Telescope, center.

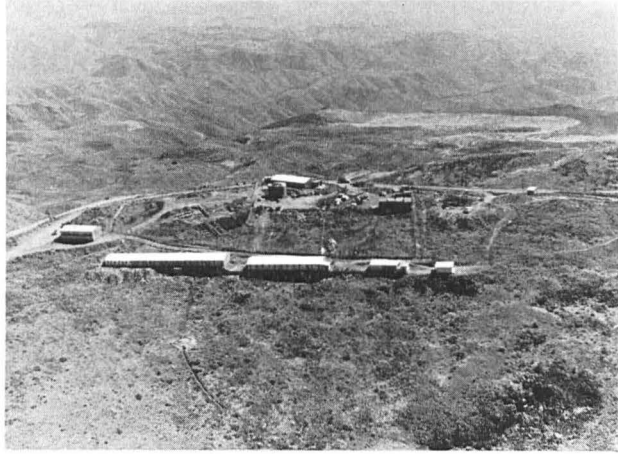


Fig. 4: Tecsá's Camp (October 1966), foreground. Mechanical Workshop, left. Building of Zeekoegat Astrograph and Tecsá Store Building, near center. Building for 1 m Photometric Telescope, right of center.

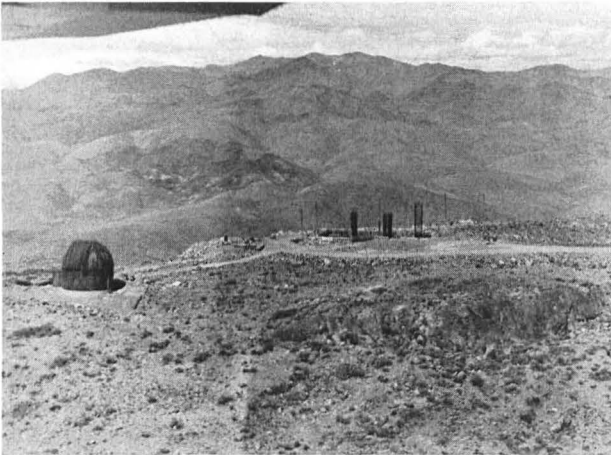
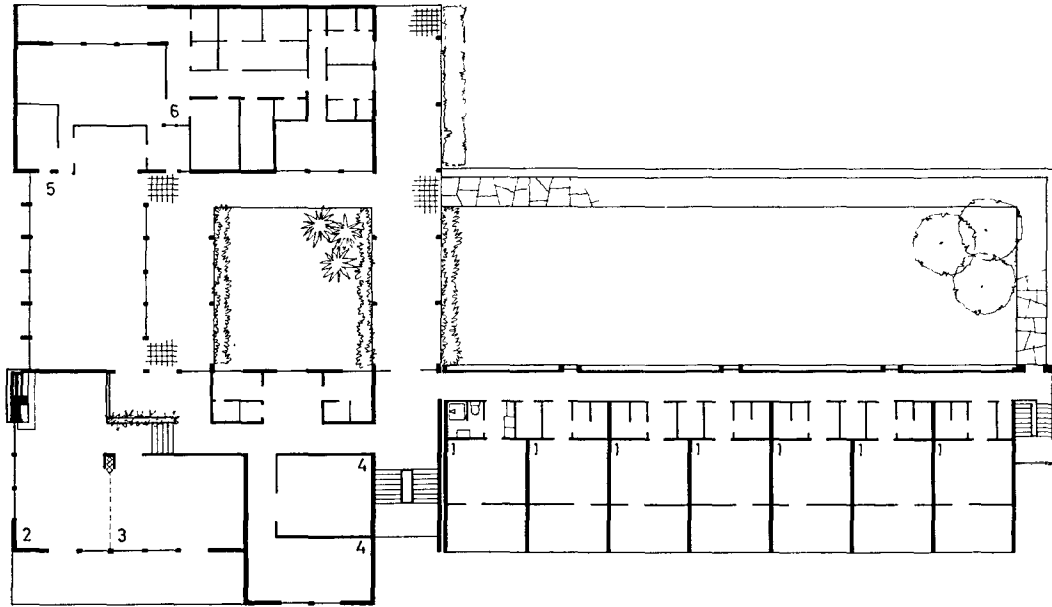


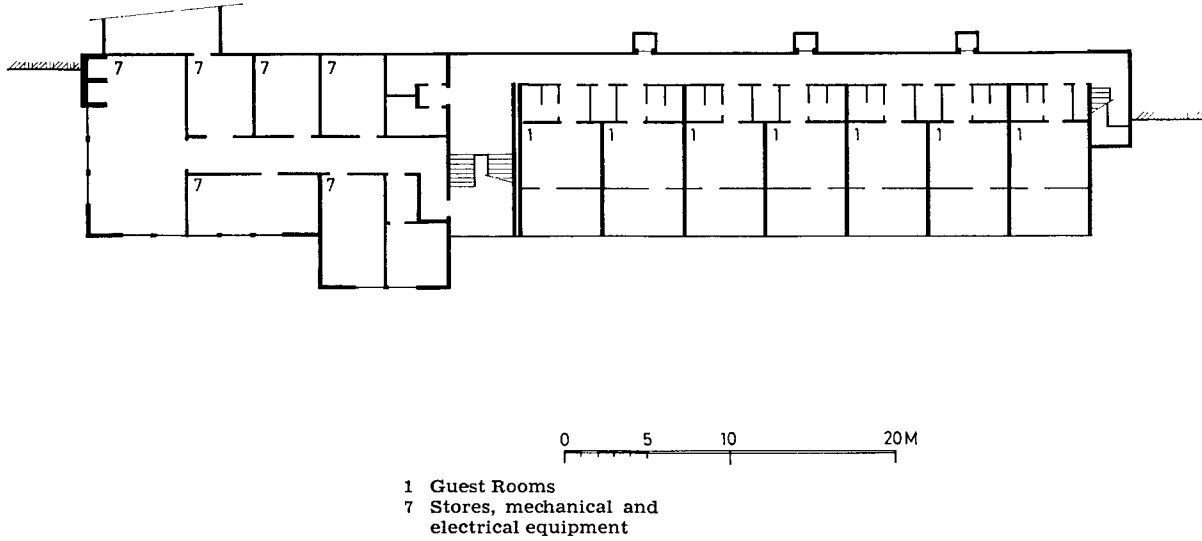
Fig. 5: Provisional Dome for 1 m Photometric Telescope (October 1966). Construction of Spectrographic Telescope Building (October 1966).



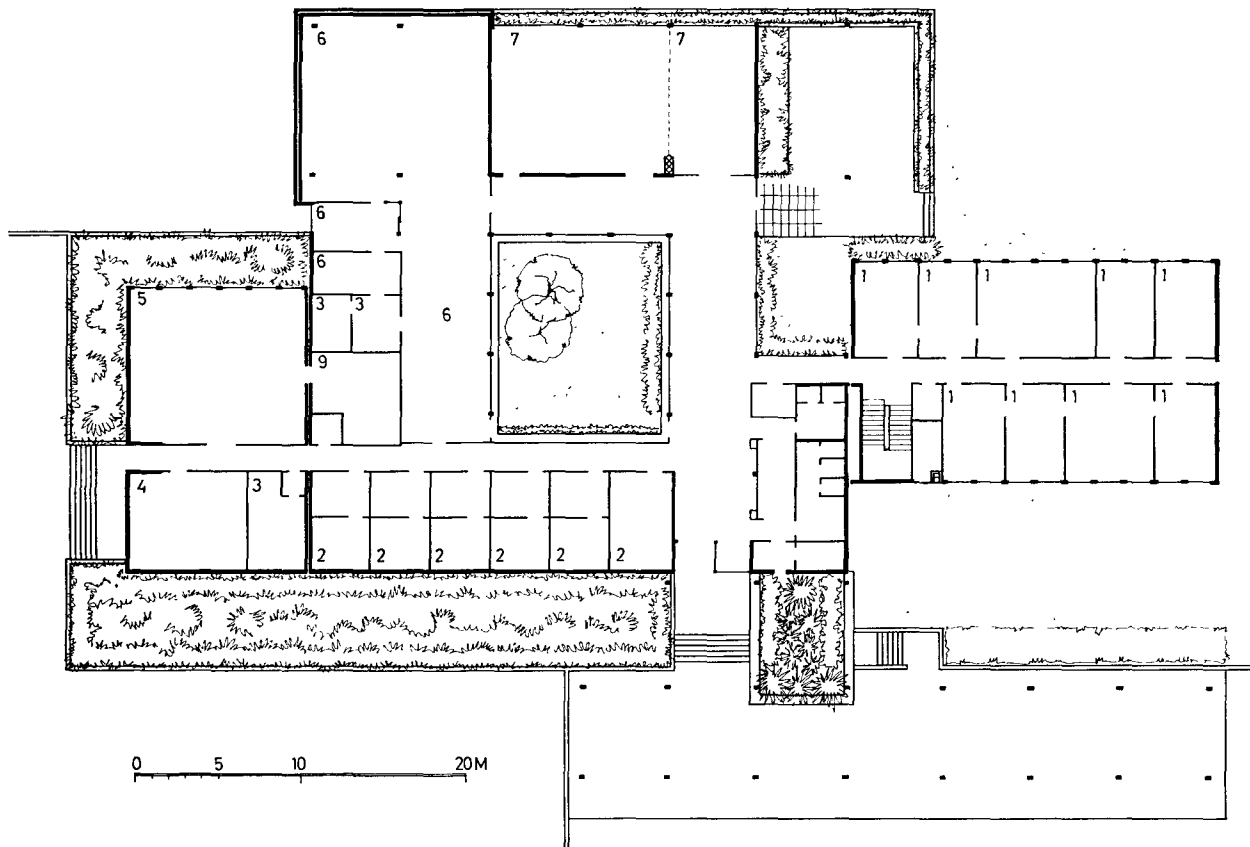
- 1 Guest Rooms
- 2 Lobby
- 3 Lecture Room

- 4 Library, Reading Room
- 5 Dining Room
- 6 Kitchen Department

Fig. 6: Hostel La Silla, ground floor;
to the right 1st floor of Guest Room wing.



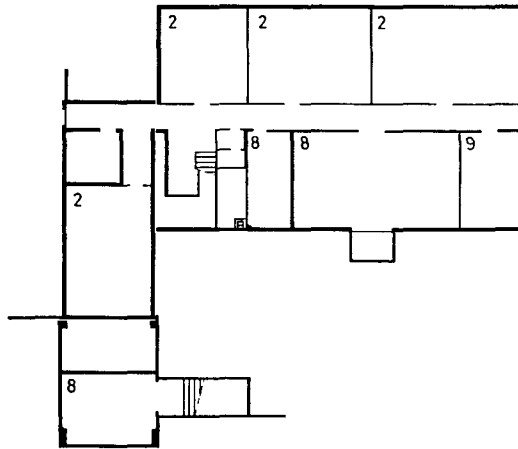
**Fig. 7: Hostel La Silla: to the left basement;
to the right ground floor of Guest Room wing.**



- 1 Offices
- 2 Measuring Rooms
- 3 Dark Rooms
- 4 Plate Store

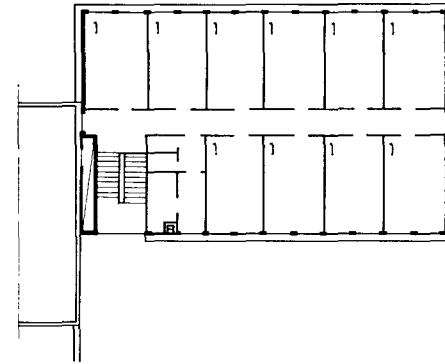
- 5 and 9 Electronic Laboratory
- 6 Library, Reading Room
- 7 Lecture Room, Conference Room

Fig. 8: Headquarters Santiago, groundfloor.



- 2 Laboratories
- 8 Heating Plant, Mechanical
and Electrical Equipment
- 9 Stores

Fig. 9: Headquarters Santiago, basement.



- 1 Offices

Fig. 10: Headquarters Santiago, first floor.

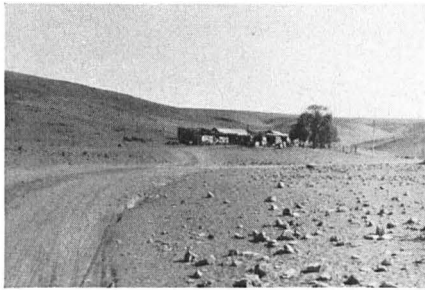


Fig. 11:
„Villa Trujillo“, our neighbours.

Fig. 12:
The Trujillo family is steadily growing; since ESO arrived, life is easier for them.

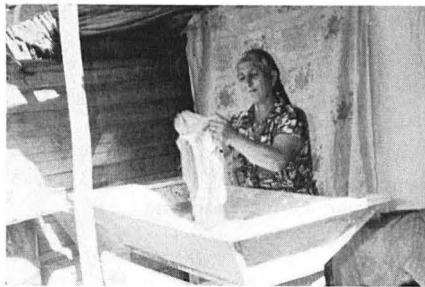
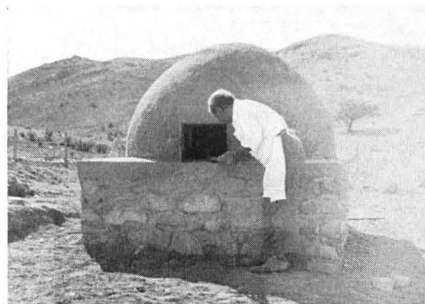


Fig. 13:
„Granny“ washing ESO linen.

Fig. 14:
The new baking stove.



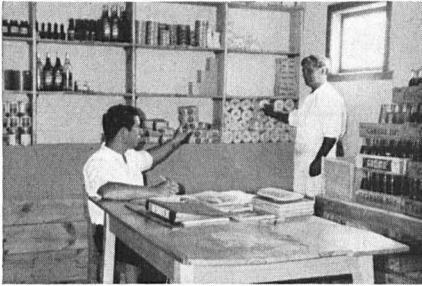


Fig. 15:
The „Despensa“.

Fig. 16:
Kitchen Pelicano.

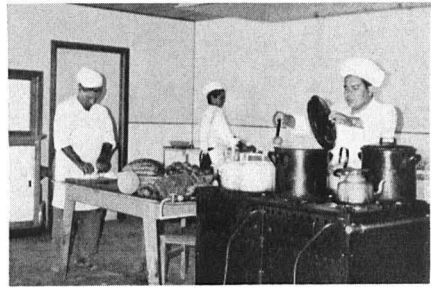


Fig. 17:
The cook Sergio Lazo and
his crew.



Fig. 18:
Dining Room La Silla.

