Organisation Européenne pour des Recherches Astronomiques
dans l'Hémisphère Austral

EUROPEAN SOUTHERN OBSERVATORY

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A. INTRODUCTION

According to the Paris "Convention portant Création d'une Organisation Européenne pour des Recherches Astronomiques dans l'Hémisphère Austral" of 5 October 1962, Art. VI. 1. a., the Council of ESO is obliged to publish annual reports on the activity of the Organization. In the following the first of these annual reports will be given. Its contents will only be fully understood in the light of introductory remarks on the historical and legal background of the enterprise.

1. Development up to the Signing of the Paris Convention

In 1953 some European astronomers convened to explore the possibilities of receiving the support of the national research organizations in their respective countries for an international agreement aiming at the construction of a joint European observatory in the southern hemisphere. The results of their endeavours varied. But in 1958 it became clear that the project could only succeed through an inter-governmental convention which would have the rank of a law in the member states. Only thus could the project acquire stability and duration. This Convention, hereafter called the ESO Convention, was signed by the authorized representatives of the member states in Paris on 5 October 1962. In it the goverments of Belgium, France, the Netherlands, Sweden and the Federal Republic of Germany undertake the obligation to erect an efficient modern observatory in the southern hemisphere. The motives for the whole enterprise are summarized in the introduction of the said Convention*).

In its 16 Articles it fixes the program of instrumentation, the rights and duties of the member states, and the interior organization. An additional Finance Protocol deals with the financial contributions and related problems. Moreover, the Convention and the Finance Protocol require the establishment of Staff Regulations and Rules and of a detailed system of Financial Rules and Internal Financial Regulations.

2. Ratification by Various Member States and Coming into Force of the Convention

In the course of 1963 the adhering countries France, the Netherlands, Sweden, and the Federal Republic of Germany ratified the Convention which thereby, according to Article XIV, came into force. In February 1964 the ESO Council convened for its first legitimate meeting. Approximately the same group had acted as provisional ESO Council during the preceding years and had carried out a considerable amount of preparatory work documented in the minutes of 21 meetings. At the 1st Meeting of the legalized ESO Council the Financial Rules and Internal Financial Regulations were already at hand, while the Staff Regulations and Rules were available only in a comparatively provisional form.

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*) The ESO Management will on request readily provide for copies of the Paris Convention of 5 October 1962.

In October 1959 the Ford Foundation of New York promised a donation of 1 000 000 U.S. dollars under the condition that four European countries join the ESO project. Without any doubt this promise has played an essential rôle in stimulating the countries concerned to reach an agreement. On 21 September 1964 the Ford Foundation transferred the above mentioned sum to the ESO account.

3. Convention between the Chilean Government and ESO

In order to facilitate international scientific activities the Swiss Government has granted to the European Organization for Nuclear Research / Organisation Européenne pour la Recherche Nucléaire (CERN) / certain immunities, preferences, and priorities in a special convention. ESO decided to aim at a similar Convention with the Chilean Government. Discussions were arranged in which the representatives of the Chilean Government fully agreed to ESO's request. The resulting Convention was signed in November 1963. It gives to ESO very much the same rights as had been granted to the Comisión Económica para América Latina (CEPAL) of the United Nations. The Convention was ratified by the Chilean Parliament and approved by the ESO Council early in 1964*).

B. ACQUISITION OF LAND IN CHILE

1. Introductory Remarks

Nowadays astronomers seem to agree that large observatories should be erected close to, or in typical cloudless desert areas. Because, however, the astronomers' families, in particular as in the case of ESO those of various nations, cannot be expected to have their permanent residences in the observatory area proper, some fairly large city, within a reasonable distance from the observatory, should be the site of the observatory's headquarters, and offer accommodation for the families of the staff. In the case of Chile only the capital of the country, Santiago, has schools of various European traditions and there are also two universities. Most large European and U. S. firms have their representatives in the city, the embassies of the ESO member states are situated there, and of course it is the residence of the Chilean Government. Therefore, Santiago was finally chosen as the site of the Headquarters of ESO and the residence of the families.

2. Purchase of Land in the Mountain Area

The mountain La Silla, in the Chilean province Coquimbo, was chosen as the most suitable place for the instruments. The reasons for the choice will be given below. An area of altogether 627 km^2 was acquired. It offers ample space for the planned instruments; in particular, ESO has great freedom in the choice of the site of the 3.5 m telescope. In addition there is much space for future development. (Here and in the following compare the figures on pages 22-26.)

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*) The ESO Management will on request readily provide copies of the Santiago Convention of 6 November 1963.

3. Mining Rights

Intensive mining activity, which is so typical of northern Chile, could cause considerable disturbance to the work of a nearby observatory. At an early stage, therefore, it was aimed at listing as completely as possible the existing mining rights. This took some time because a considerable number of communities had to be visited and their mining registers investigated. In addition ESO had to claim its own mining rights in the whole area, and to contact the owners of existing rights. In fact the ESO land contains numerous small mining attempts. But there are only very few which could possibly come into conflict with ESO's interests. We plan to eliminate each of these latter cases in one way or another.

4. Donation of Land in Santiago by the Chilean Government

After ESO had considered various possibilities, the Chilean Ministry of Foreign Affairs in 1964 offered the donation of a plot for the Headquarters of ESO in the suburb Vitacura of Santiago. In the south it borders the land on which the United Nations are constructing their South American Headquarters. It has an area of 3.4 ha which is quite sufficient for present and future needs. The Convention concerning this donation was sent to the Chilean Parliament for approval in 1964.

C. CHOICE OF THE TELESCOPE SITE

1. Seeing Tests in South Africa

The choice of the telescope site needs some comments. In the beginning ESO looked for an adequate place in South Africa. In order to find the most suitable site, seeing investigations were carried out in the Orange Free State as well as in the Cape Province. Later investigations were concentrated on more limited areas in the Great Carroo and in the New Field bordering the Carroo in the north, but 1000 meters higher.

2. Relations to AURA

In the meantime the American AURA-Group (Association of Universities for Research in Astronomy) had already, under the direction of Mr. Stock, investigated the possibilities for an Interamerican Observatory in the southern Atacama Desert and its wider surroundings. The results were very promising and were readily put at the disposal of ESO. In the winter of 1961/62 ESO sent the superintendent of its South African seeing investigations, Mr. Muller, to Chile, in order to make a comparison with the African results. In 1963 a group of ESO astronomers, together with representatives of AURA, visited Chile. On this occasion the possibility of settling ESO in the large property of AURA, south of Vicuña, was discussed in rough outline. During the year 1963 the arguments in favour of a site of ESO in Chile gained more and more weight, but the idea of erecting the instruments in the AURA area was finally dropped in 1964.

3. Choice of the Site

In spring 1964 Messrs. Fehrenbach, Heckmann, Muller and Rösch inspected some favourably situated mountains in the nearer and wider vicinity of the AURA area. Finally the small precipitation and cloudiness as well as the comparatively easy access spoke in favour of La Silla. The geographical latitude of La Silla is —29° 16', its longitude is 70° 42' West. The highest peak has an elevation of 2440 m. It stands out only by about 70 m from a long and undulating mountain ridge running SE to NW, on which the planned observatory could easily be placed. The eastern flank of the mountain falls away into the Quebrada Pedernales, while the north and west sides slope into the Quebrada Pelícano.

This latter Quebrada (dry river bed) is the north-west border of the ESO land. A fairly good public road of about 15 km length leads from the Carretera Panamericana, north of the railway station Chañar, into the Quebrada Pelícano. In the Quebrada there seems to be enough water and it will be comparatively simple to construct a road about 20 km long over the northern slope to the summit.

4. Local Arrangement of the Instruments

During a visit to La Silla in October 1964 it was decided to install four of ESO's main instruments, namely the Objective Prism Astrograph of 40 cm aperture, the Photoelectric Telescope of 100 cm, the Spectrographic Telescope of 150 cm, and the Schmidt Telescope of 100 cm aperture, on the mountain ridge mentioned above, at intervals of about 100 meters.

In line with the instruments, two masts, each 20 m high, are to be erected for the purpose of registering turbulent temperature fluctuations at various levels. They will give the dependence of the fluctuations on the height above the surrounding ground, which might be important for the final decision on the location of the site of the large instrument of 3.5 m aperture, and on the height of its building. There is of course a fair probability that the large instrument will be best placed on the highest peak of the mountain, as this is reasonably isolated.

D. INSTRUMENTS

The ESO instruments will be described in the following order:

a) The Prism Astrolabe
b) The Objective Prism Astrograph of 40 cm aperture
c) The Photoelectric Telescope of 100 cm aperture
d) The Spectrographic Telescope of 150 cm aperture
e) The Schmidt Telescope of 100 cm aperture
f) The Telescope of 350 cm aperture.

a) The Prism Astrolabe

Among the ESO instruments, the Paris Convention mentions in Article II under d) a meridian circle. When the ESO project was started, this type of instrument would have filled a considerable gap in the astronomical activity of the southern hemisphere. During ESO's preparatory stage, however, several southern instruments of this type, which until then had been inactive, began larger observing programs. ESO decided therefore to substitute the meridian circle by a prism astrolabe, which, to some extent, delivers the same data as a meridian circle, but is less influenced by systematic errors.

In 1964 an astrolabe was acquired at a favourable price. It was also very satisfying to learn that the Chilean Observatory on Cerro Calán near Santiago, which belongs to the Universidad de Chile, was willing to cooperate in a very useful way: If ESO would install the astrolabe on Cerro Calán, they would be willing to put at our disposal their group of modern quartz clocks and to participate in the observations. This opportunity was heartily welcomed by the ESO Council. In 1964 an agreement was prepared in which ESO promises to contribute the astrolabe and a very modern chronograph. In addition ESO declared its willingness to pay the construction costs of a small building sheltering the instrument. The Observatory of Cerro Calán, on the other hand, was willing to lay out the wiring system from the main building of the Observatory to the astrolabe building, in order to make the quartz clocks available. Moreover, they promised to join the observing program with at least one observer. It may be assumed that this very welcome collaboration will take place in the course of 1965.

b) The Objective Prism Astrograph

is not mentioned either in the Paris Convention. It is equivalent to part of the French financial contribution for 1961. Originally it was intended to work independently of ESO; but later it was included in the ESO Budget. It was installed in the Great Carroo in South Africa for the observation of radial velocities, and at the same time gave useful information about the seeing conditions of that area. It is planned to leave the instrument in Africa as long as La Silla is insufficiently developed. It is to be expected that the instrument will be moved to Chile in 1966. The instrument has one photographic and one visual tube, each of 400 cm focal length. The photographic tube has a doublet objective lens of 40 cm aperture, in front of which an objective prism of the Fehrenbach type is mounted. For several years it has produced a wealth of observing material which is measured and evaluated in France at the Marseille Observatory. Many interesting results have already been obtained.

c) The Photoelectric Telescope

is one of the instruments mentioned under c) in the Paris Convention. It is a parabolic reflector with an aperture of 100 cm and a focal ratio f/15. The

instrument has a Cassegrain and a Nasmyth focus, both to be used for photoelectric observations exclusively.

The primary mirror is made of "Therman" (Schott-Jena), and the secondary mirror and the Nasmyth flat of "Homosil" (Heraeus-Hanau).

The optics was ground by Zeiss-Jena. It was tested in their laboratories and was found to be very satisfactory. The mechanical parts were designed by Engineer Hooghoudt-Leiden and constructed by Rademakers-Rotterdam. The mounting is of the fork type. It was inspected in the factory on 7 December 1964 and was ready for shipment to Chile at the end of 1964. It is planned to accommodate the instrument on La Silla about the middle of 1965, provisionally in a building with a dome of 8 m diameter which from 1967 on will serve for the astrograph described under b). At that time the photoelectric telescope will be shifted to its own building with a 9 m dome. It should begin its observing activity at the earliest possible date in 1965.

d) The Spectrographic Telescope

was originally planned with a diameter of 100 cm as one of the instruments under c) of Article II of the Paris Convention. The French Observatoire de Haute Provence, however, was planning a similar instrument with 150 cm aperture. Various inquiries from manufacturers of astronomical instruments proved that it was advantageous to have two instruments of almost identical dimensions made simultaneously by one manufacturer. The ESO Council, therefore, agreed that the instrument be of the same dimensions as the French one, and be ordered from the same firm REOSC (Recherches et Etudes d'Optique et de Sciences Connexes), in Paris, whose price was the most favourable. REOSC will deliver both the optical and mechanical parts. The mirror disc was ordered from SOVIREL Parra-Mantois. The discs of the secondaries and flats are made of Corning quartz.

The instrument will have an English mounting and will be equipped with a Cassegrain focus f/15 and a Coudé focus f/30. The Coudé spectrograph will have gratings of 200 × 300 mm surface with 1200 lines per mm. The collimator will have a focal length of 6 m. There will be 3 cameras with f/1.9, f/3.3 and f/12.5 respectively.

At the end of 1964 large parts of the mounting were nearing completion. The instrument will be installed on La Silla probably not before early 1967, due to some delay in the optics. Its dome will have a diameter of 12 m.

e) The Schmidt Telescope

is mentioned in Article II of the Paris Convention under b). In a very early stage of the project it was already planned to use this instrument in order to fill the southern gap of the Palomar Sky Survey. The focal length of the instrument, therefore, was to be identical with that of the 48" Schmidt of Mount Palomar. But the focal ratio was intentionally changed to f/3, in order to diminish the variation of spherical aberration with wavelength. This was

important because, in contrast to the 48" Palomar Schmidt, the instrument is to be used with various objective prisms. The dispersion of these prisms was discussed in 1964, but nothing has yet been decided. In 1964 it was agreed to give the instrument a fork mounting and a dome of 13 m diameter. In the same year the discs for the optical parts were ordered from Schott-Mainz, and their grinding from Zeiss-Oberkochen. The mirror disc will consist of low expansion glass Duran 50 and the correction plate of UK 50, a new glass with especially high transparency in the UV. The plates will have a size of 30 × 30 cm². Mr. Strewinski-Hamburg will be responsible for the design. Many details are to be taken over from the Hamburg Schmidt which has now worked satisfactorily for 10 years.

f) The 3.5 m Telescope

is mentioned in Article II of the Paris Convention under a). Its aperture is described as being about 3 m. The ESO Council finally decided to choose a diameter of 3.5 m, and on this all subsequent investigations have been based. It is actually this instrument for the construction of which ESO was founded. During 1962 some European opticians, chiefly Mr. Baranne of Marseille and Mr. Köhler of Oberkochen, became involved in the task of defining the simplest and most efficient realization of the three foci of the instrument. The prime focus f/3, the Cassegrain focus f/8, and the Coudé focus f/30 were chosen after discussions with several experienced astronomers, among others Mr. Bowen of Pasadena.

Late in 1964 the optical investigations were almost completed. They made free use of so called "deformed", i. e. non-spherical and non-parabolical optical surfaces which, with electronic computers, allow for an enormous extension of the field of geometrical optics. Naturally, the actual processing of such surfaces requires special methods, some of which are as yet only partially developed. According to the computations mentioned it now seems to be possible to reach a satisfying definition of star images in an area of about 1° diameter in the prime focus, provided a suitable zero power system of correcting lenses is introduced. The results of Messrs. Baranne and Köhler will be published in 1965.

By 1964 the ESO Council had already decided to make the mirror disc of fused quartz. Late in 1964 an agreement was reached with Corning Glass International. They will deliver a disc of 351 cm diameter and 52 cm thickness with a central hole, the exact diameter of which will be fixed somewhat later. The front surface of the disc will have an approximate radius of curvature of 21 m. The delivery time is 18 months.

The Council also agreed that an optical laboratory be constructed in Haute Provence, the building costs being provided for by the French Centre National des Recherches Scientifiques (CNRS), and the equipment by ESO. This laboratory will provide the means of grinding and polishing large mirrors up to 4 m diameter. They will be tested in the horizontal and vertical position of the optical axis. It may be assumed that the necessary agreement will be signed in 1965.

In 1964 the mounting of the instrument was not yet finally decided upon. Some studies of Mr. Strewinski, however, show that a very strong fork mounting might be well justified.

E. DOMES

In 1964 the Council approved the plan to have the domes of 9, 12, and 13 m diameter resp. for the instruments c), d), e) designed along the same basic principles, and to have them constructed by the same firm.

A very detailed memorandum was sent to various European firms which were asked for tenders. The reaction was not too favourable. A final choice could not be made before the end of 1964. It is to be hoped, however, that a clear decision can be made in 1965.

F. BUILDING PROGRAM

In order to further the plans for the building activity of ESO, the provisional ESO Council at its 19th Meeting in Geneva on 5—7 February 1963 created a special Working Group for the ESO Buildings. The introductory work of this group resulted in a Memorandum on the ESO Building Activity of 8 November 1963, in which the general volume of the building program of ESO is preliminarily defined, and a 2 stage program for the building activity is proposed.

In its 21st Meeting in Bonn on 15 November 1963, the provisional Council emphasized that a uniform solution of the building program should be aimed at, and it accepted the 2-stage-program for the ESO building activity as laid down in the Memorandum mentioned and recommended by the ESO Finance Committee.

G. ARCHITECTS AND CONSULTING ENGINEERS

At the Bonn meeting of the provisional Council the Director was authorized to engage a local architect for a period of 6 months to complete a provisional design of the different ESO buildings. The preliminary and final designs would be made by an architect working together with the firm to be selected in international competition for the entire construction. For the provisional design the Director has appointed the Architect Axt, Hamburg, who has completed this work within the stipulated time.

Various possibilities of organizing ESO's building activity have been considered in the Director's Office.

Finally the temporary Working Group for ESO Buildings, established by the Council on 26 and 27 May 1964, agreed in their Meeting on 27 June 1964 that:

1. An architect should be chosen by ESO who will be independent of the European and Chilean contractors, and who will prepare the pre-design and the final design.
2. A large European construction firm or group of firms of international reputation was to be found, whose tasks it would be to work out the technical design, and to find a Chilean contractor.
3. ESO would have in any case to organize its own controlling group which should, during the whole building activity, permanently assist ESO in controlling all steps of the performance.
4. The domes should be removed from the contract with the construction firm for the buildings, and there should be a separate tender for the domes.

The Director, in mutual agreement with the President of the ESO Council, decided to appoint as architects Messrs. Ir. F. W. de Vlaming and Ir. H. Salm, Amsterdam, Holland. They had already gained experience in designing astronomical buildings in their country.

Among various firms tendering as consulting and supervising engineers, the firm of HOCHTIEF, Essen, was in an especially favourable position, as they have already established an office in Santiago, Chile, where they act as consultants for a Chilean state organization which is constructing a modern copper refinery. It appeared that the combination of the offers of HOCHTIEF and SENTAB, Stockholm, worked out most favourably.

Both firms, HOCHTIEF and SENTAB, were prepared to join forces and to form a consortium for the purpose of this work.

In its Meeting on 2 and 3 December 1964, the Council decided to choose the consortium HOCHTIEF and SENTAB as consulting engineers for the first construction period of the ESO building activity.

H. PROVISIONAL WORK NEAR LA SILLA

1. Site Work at Cinchado

Work started in La Serena in the first week of February 1964. As AURA had already chosen its definite site on the mountain Tololo, it was decided to explore first the mountain Cinchado, situated in the AURA territory, about 8 km to the SSW of Tololo. The existing AURA road could be used as far as a little farm named "Los Placeres". From this farm a new road to Cinchado was planned, about 21 km long. The road trace was completed by 24 March.

Also in the month of March, about 500 mule loads of building material were transported to Cinchado, in order to construct an observers' house at the top.

2. New Sites

Meanwhile new mountains to the south as well as to the north of Cinchado were studied by Messrs. Heckmann, Fehrenbach, Rösch and Muller, during March and April. Finally a mountain was selected 88 km to the NNE-NE of La Serena. This choice was approved by the Council, in June 1964, under the condition that sufficient water should be found close by. This mountain, known in the vicinity as "Cerro La Silla", is named "Cinchado" in the map of the Instituto Geográfico Militar, but lies about 100 km north of the mountain with the same name in the AURA area.

3. Meteorological Observations at Tololo

In April part of the South African equipment arrived in La Serena, after three months' delay in the customs. In the same month, one of the meteorological masts and smaller instruments were transported to Tololo, together with three prefabricated houses.

Mr. Unz from Tübingen, who had also installed these masts in South Africa, arrived in early April in Chile, in order to start the meteorological program and tho instruct the ESO observer Mr. Palisson. Due to serious delays in the levelling work at the top of Tololo, amounting to seven weeks, only one mast was ready for use at the end of May. Also in May, the double beam telescope, which was involved in an accident in South Africa, was repaired and put into operation.

4. Water Prospect

After the decision of the Council to explore the suitability of La Silla as the definite site for the Observatory, water research began in Quebrada Pedernales, as was advised by the Instituto de Investigaciones Geológicas. This research, which started in July, was continued through the year 1964 with some delays, due to lack of workmen willing to work under the hard conditions in the Quebrada Pedernales. Much support was given by the Servicio Nacional de Salud. Water was found in Pedernales but not yet in sufficient quantities. Better results were obtained in the Quebrada Pelícano, where in December the yield in one well was over 120 m^3 of water per day.

5. Road Tracing

The ESO lawyer for mining rights, Mr. Urrutia, advised ESO to refrain from any activity at the top of La Silla, till all mining right problems were settled. He expected this to have happened by the middle of January 1965. It was therefore decided to make only a detailed study of the mountain area, in order to find the best possible road trace to the top of La Silla. The trace for the first provisional road, from La Silla to Quebrada Pedernales, was established fairly quickly. Later, however, it turned out that this

projected road trace passed near the territory of the active mine Aurora, and so it had to be cancelled. Meanwhile studies for the final road trace were already under way. This work lasted until the end of 1964.

6. Construction of Camp Pelícano

In October the construction of the camp Pelícano was started. An existing well was improved by the Servicio Nacional de Salud and a waterpump was installed. Preparations were made for the meeting which was to take place in the camp, in the last weeks of October; see: "Report on the Director's two Trips to Chile in August and October 1964" (Chi-12).

In November the construction of the houses in the camp was started.

7. Transport

At first the import of cars was delayed. Two vehicles were therefore rented from April to September. In September a Carryall Chevrolet and a Pick up Chevrolet were imported and one more vehicle was rented for the service in camp Pelícano. Transport caused many problems and delays. The transport line La Serena—Pelícano was especially vulnerable.

8. Summary

At the end of December 1964 the state of affairs was as follows:

a) *Office in La Serena,* functioning with five persons active.

b) *Camp Pelicano,* with two old houses and four new ones installed, a carpenter's workshop in use, fifteen persons active, animals camp installed and functioning with five horses and six mules, two wells ready with one pump installed.

c) *Road project,* ready from camp Pelícano to the top of La Silla.

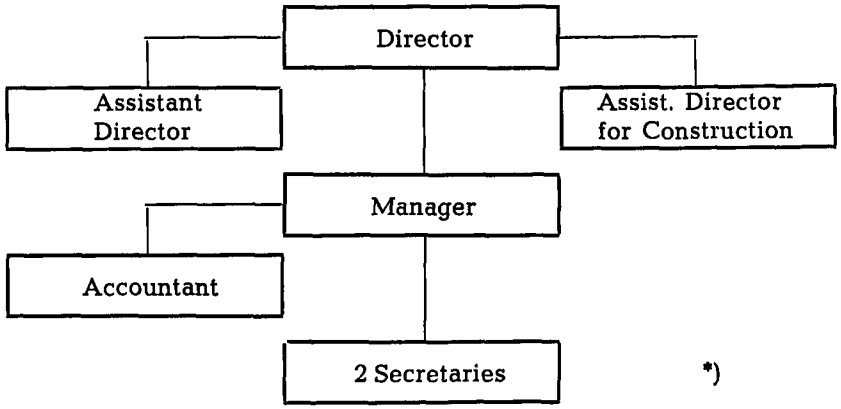
I. ORGANIZATION

The Organization ESO itself consists of the Council and the Director. The Council is formed by representives of the member states; each member state has two representatives, of whom one is an astronomer*). These representatives are assisted by experts.

The task of the Council is clearly laid down in the ESO Convention. The Council has nominated the Director, who is in charge of the general management of the Organization and who is the legal representative of the Organization.

The Director is assisted by scientific and administrative personnel. The office of the Director was established in Hamburg-Bergedorf and was organized in 1964 as follows:

*) See Appendix 1



*)

The Council has, according to the ESO Convention, created a Finance Committee with the aim of assisting and advising the Council on all financial and administrative matters.

The members of this Finance Committee are representatives of the five member states. The task of the Finance Committee is laid down in the Financial Rules.

Furthermore, the following Committees and Working Groups have been created to assist the Council and the Director in the specialized fields of activities:

a) Instrumentation Committee with a
Sub-Committee for Spectrographs and a
Sub-Committee for the Photometer of the Photoelectric Telescope;

b) Committee for the Study of the Results of the Site Tests;

c) Working Group for Buildings;

d) Working Group for Publication Problems;

e) Ad hoc Committee for the Organization of Scientific Activity;

f) Committee for the Organization of Symposia**).

The first meeting of the legalized Council took place in Paris on 5 and 6 February 1964. Subsequent meetings were held on 26 and 27 May 1964 and 2 and 3 December 1964.

Early in 1964 the Organization established an office in La Serena, Chile, headed by a Superintendent*).

This office will be the basis of the Organization's building activities on La Silla.

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*) See Appendix 2

**) See Appendix 3

The Chilean organization will be extended during 1965 by the establishment of a small office in Santiago and by the establishment of camps at Pelícano (20 km from La Silla) and on the summit of La Silla.

The definitive headquarters of ESO will later be located in Santiago de Chile.

K. ESTIMATED AND ACTUAL EXPENDITURE

As mentioned above, the Organization has been active in South Africa as from 1955 to investigate the seeing conditions and to study a possible establishment of the Observatory in that country. The expenses of these activities, increased by some payments on instruments and preliminary expenses of the Hamburg Office up to 31 December 1963, amounted to $ 711 500,-. The budget for the year 1964 against the actual expenditure during that year can be detailed as follows:

Heading	Total Budget up to 31. 12. 1970 US $	Budget 1964 US $	Expenditure 1964 US $
I. Capital Expenditure			
A. Land, Buildings, Roads	5 103 000	80 000	31 800
B. Instruments	6 840 990	644 500	62 000
C. Consultants and Architects	880 000	112 600	50 700
II. General and Overhead Expenses	2 166 200	191 500	195 250
III. Astron. and Meteorol. Activity South Africa	500 870	45 000	41 400
Unforeseen	230 140	26 400	15 800
	15 721 200	1 100 000	396 950
Less: Sundry Income	—	35 000	50 950
TOTAL BUDGET CONSTRUCTION	15 721 200	1 065 000	346 000
IV. Astron. and Meteorol. Activity	1 225 000	—	—
V. Maintenance Buildings and Instruments	450 000	—	—
TOTAL BUDGET, INCLUDING EXPLOITATION	17 396 200	1 065 000	346 000

The Budget 1964 was based on progress estimates, which fell behind schedule. Therefore, much of the estimated expenditure for 1964 had to be transferred to the years 1965 and 1966.

The total expenditure up to 31 December 1964 can be summarized as follows:

Heading	Total Expenditure up to 31. 12. 1964 US $
I. Capital Expenditure	
A. Land, Buildings, Roads	31 800
B. Instruments	235 650
C. Consultants and Architects	79 700
II. General and Overhead Expenses	265 600
III. Astron. and Meteorological Activity South Africa	500 900
Unforeseen	15 800
	1 129 450
Less: Sundry Income	71 950
	1 057 500

The total budget for 1965 has been fixed at $ 3 222 200,- detailed as follows:

Heading	Total Budget up to 31. 12. 1970 US $	Budget 1965 US $
I. Capital Expenditure		
A. Land, Buildings, Roads	5 103 000	1 286 200
B. Instruments	6 840 990	962 100
C. Consultants and Architects	880 000	419 840
II. General and Overhead Expenses	2 166 200	449 100
III. Astron. and Meteorol. Activity South Africa	500 870	—
Unforeseen	230 140	44 960
TOTAL BUDGET CONSTRUCTION	15 721 200	3 162 200
IV. Astron. and Meteorological Activity Chile	1 225 000	90 000
V. Maintenance Buildings and Instruments	450 000	—
	17 396 200	3 252 200
Less: Sundry Income	—	30 000
TOTAL BUDGET, INCLUDING EXPLOITATION	17 396 200	3 222 200

As the accounts of the Organization for the year 1964 have not yet been audited at the time of writing this Report, a balance sheet of the Organization as at 31 December 1964 cannot be included.

Hamburg-Bergedorf
June 1965

O. Heckmann

L. APPENDICES

1. Members of the ESO Council during 1964

Belgium:	A. G. Velghe M. Deloz
France:	Ch. Fehrenbach P. Baraduc until 1964, June 1st R. Poussard since 1964, June 1st
The Federal Republic of Germany:	W. Fricke until 1964, March 4th H. H. Voigt since 1964, March 4th K. F. Scheidemann
The Netherlands:	J. H. Oort (President) J. H. Bannier
Sweden:	B. Lindblad G. Funke

2. Employees on Contract with ESO as at 1 November 1964

Hamburg Office:

O. H. L. Heckmann	Director
J. M. Ramberg	Assistant Director
H. O. Voigt	Assist. Director for Construction
J. Bloemkolk	Manager
H. W. Marck	Accountant
E. Görner	Secretary
G. A. M. Jacobse	Secretary

Chile:

A. B. Muller	Superintendent
H. E. Schuster	Assist. Astronomer

South Africa:

J. P. Kaufmann	Assist. Astronomer

Local Staff and monthly paid Labour in Chile at 1 November 1964

H. Carrasco P.	Camp Supervisor
J. Palisson	General Technical Assistant
A. Cuthbert T.	Secretary/Accountant
A. Urquiza U.	Store Keeper and General Assistant
B. Melys R.	Driver
A. Rozas L.	Driver

3. Members of the ESO Committees and Working Groups during 1964

ESO Finance Committee

Belgium:	M. Deloz
France:	M. Bourreau
The Federal Republic of Germany:	H. Trabandt
The Netherlands:	J. H. Bannier (Chairman)
Sweden:	G. Funke

ESO Instrumentation Committee

Belgium:	R. Coutrez
France:	A. Couder
	G. Courtès
	Ch. Fehrenbach (Chairman)
The Federal Republic of Germany:	A. Behr
The Netherlands:	J. Borgman
	M. G. J. Minnaert

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

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

ESO Working Group for Buildings

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

ESO Sub-Committee for Spectrographs

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

ESO Committee for the Photometer of the Photometric Telescope

The Federal Republic of Germany:	A. Behr
The Netherlands:	M. G. J. Minnaert
	J. Borgman

ESO Working Group for Publication Problems

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

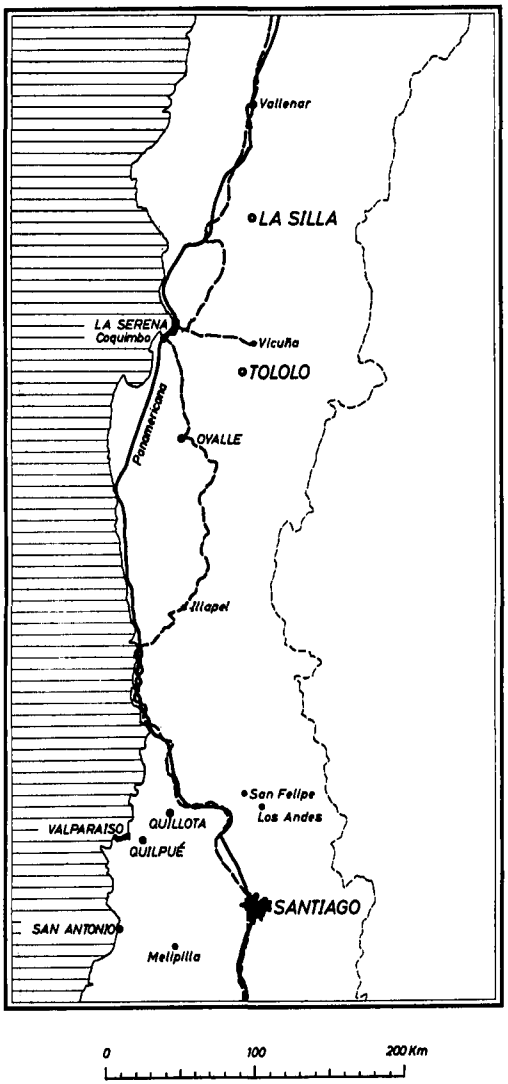

Fig. 1: Chile between Santiago and Vallenar.
(heavy line) Panamerican highway.
(heavy dashes) Railway.

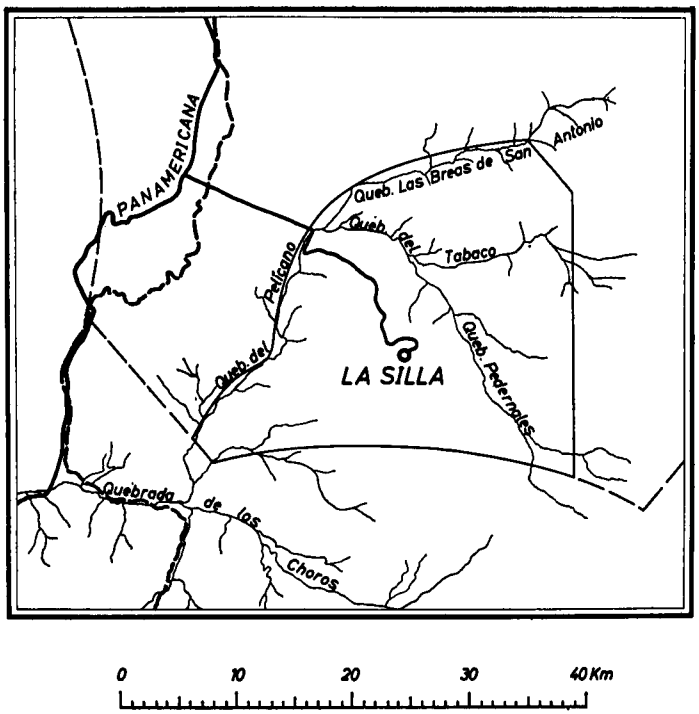

Fig. 2: ESO property around La Silla.

(heavy line)	Panamerican highway and access road to La Silla.
(heavy dashes)	Railway.
(light line)	Limits of ESO property and dry river beds.
(light dashes)	Limits of former State property.

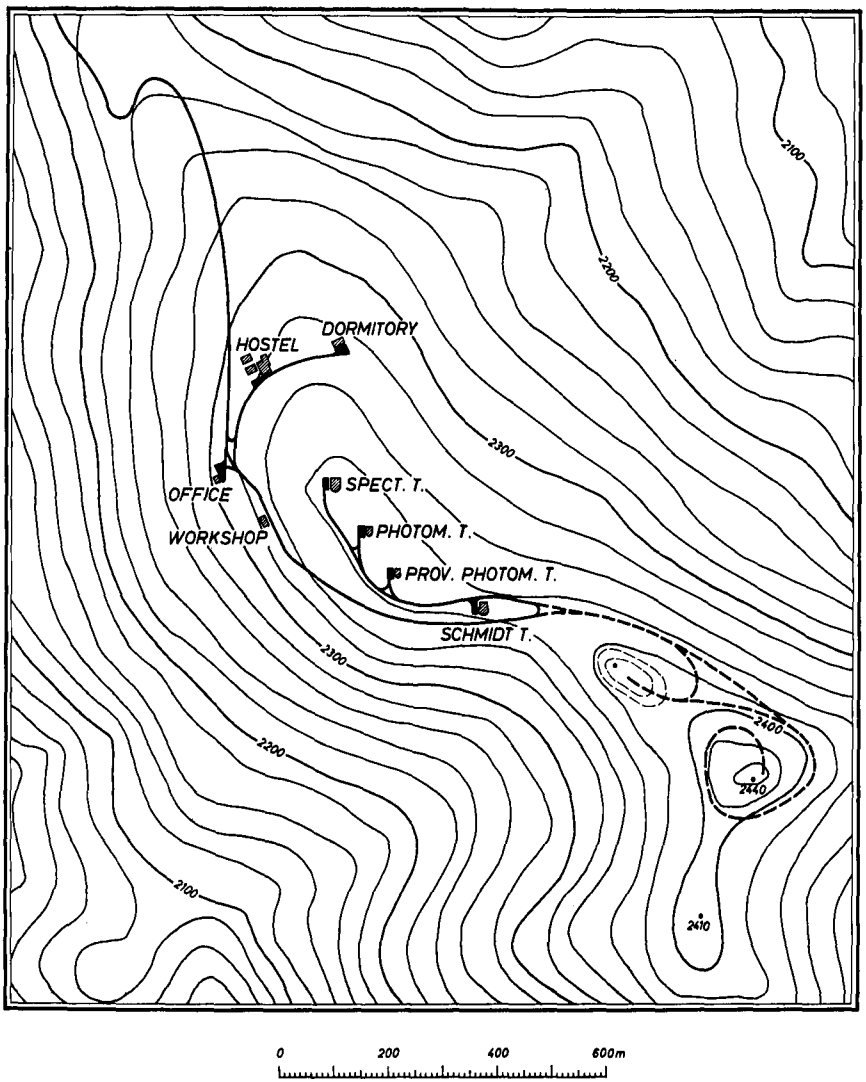

Fig. 3: Summits and ridge of La Silla with indications of roads and building sites.

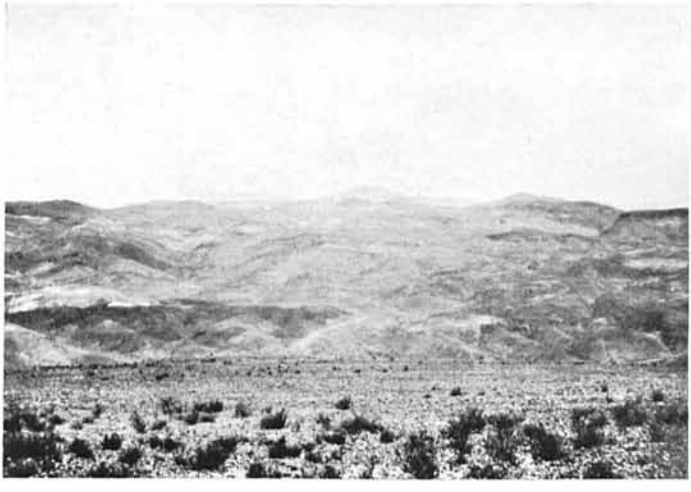

Fig. 4: La Silla (centre of figure) at a distance of 25 km.

Fig. 5: Ridge and second summit of La Silla (2410 m) as seen from first summit (2440 m). View to NW.

Fig. 6:
Second and first summit of La Silla as seen from the ridge. View to SE.

Fig. 7:
Site of ESO Headquarters in Santiago-Vitacura.