

Official Speeches at the NTT Inauguration

Prof. H. VAN DER LAAN, ESO's Director General



Your Excellencies, Honoured Guests,
Ladies and Gentlemen,

To welcome all of you, in ESO Headquarters and on our La Silla Observatory in Chile, to this festive dedication of our New Technology Telescope, is a pleasure and a privilege. This is *one* event on *two* continents, ESO's two major sites connected by several electronic communication links, ESO's guests and ESO staff present and participating on a wintry afternoon in Bavaria and on a sunny summer morning at 2400 m, high in the beauty of the Atacama desert. We hope that technology will not fail us now, but if it does and we cannot hear and see each other, then still it will be a *celebration, in two simultaneous* parts, by people linked by their engagement for astronomical exploration.

ESO, a small but not *uninteresting* European Organization, has since its founding 27 years ago, been enriched by three new member states, Denmark, Italy and Switzerland. The latter two nations, for now the latest members of this 8 European nation astronomy chain, obtained the green light for their accession with a Council decision on 26 March 1980, effected in the course of 1982. In that same Council meeting it was de-

ecided that the entrance fee to be paid by the new members in accordance with the ESO Convention, would be used for the construction of a telescope of 3.5 m aperture, exploiting the newest technologies. Note that this imaginative project could only be realized because all member states agreed not to profit from this entrance fee to reduce their own contributions . . . Thus it became possible to enhance ESO's capacity in the form of total telescope time offered, through an addition to its suite of telescopes, an enhancement required by the enlargement, by about 25%, of the ESO user community.

From *that* set of decisions to this day, a lengthy path had to be travelled, often in the literal sense of the term, which took many ESO staff members to industries throughout Europe and frequently to our observatory in Chile. This path required persistence and patience, from the staff and from their spouses and families, in order for this common effort to achieve the communal success which today we celebrate jointly.

The New Technology Telescope, equipped with active optics, precision large scale mechanics, housed in a cleverly different, octagonal building (named corn silo by some . . .) and able to be controlled remotely from Europe, bears

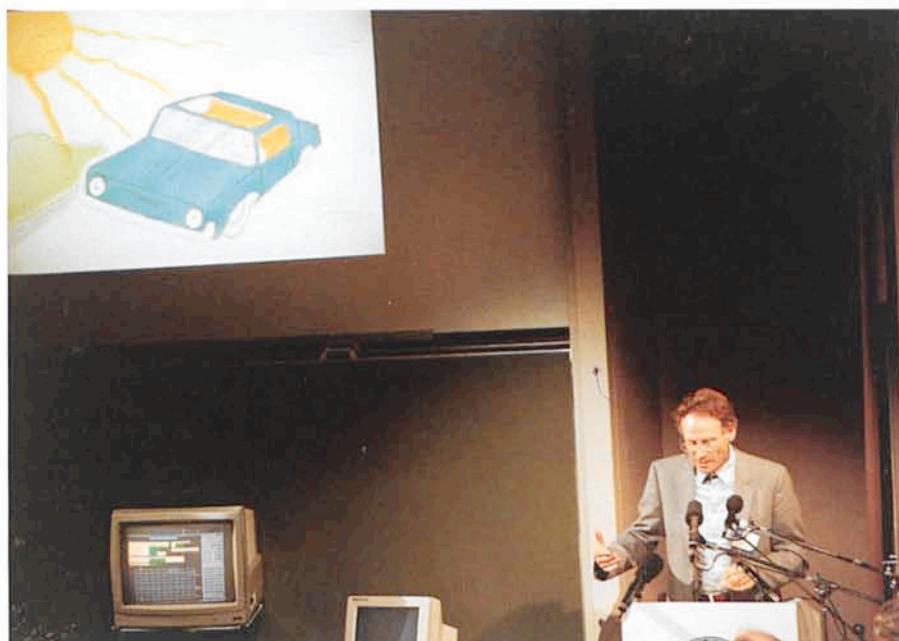
its prosaic name with good reason. It is already now the centre of envious attention. With two press releases and several descriptive articles in our journal *The Messenger*, it has attained popularity far beyond our member states, with a number of more or less identical twins being spawned with highest priority in astronomers' plans for the future elsewhere.

Just to be sure that in, say, five years the NTT will not be an *Old Technology Telescope*, we intend to equip it with *adaptive optics*, exploiting its superb optics and its marvelously low 'dome seeing' and then to attain image sharpness only thought possible for space telescopes one hundred times as expensive as the NTT.

The designation 'New Technology Telescope' is warranted by the innovations to which I have alluded and of course the creativity, improvisation, collaboration and *esprit de corps* achieved by ESO staff in Europe and in Chile and by our industry partners. A complex facility like the NTT is, to begin with, necessarily full of problems and faults, infant's teething troubles. The community astronomers keenly competing to get their hands on this exciting machine for their ambitious research goals, will need patience and tolerance as we perfect this telescope in practice, the telescope which on the cover of the American journal *Sky & Telescope* was named 'the best telescope yet' . . .

The NTT is the result of many talented people's cumulative efforts. I can name but three of them: my predecessor Lodewijk Woltjer, who guided the decision-making and guarded the telescope's relative simplicity, Raymond Wilson, whose creative development of active optics concepts was followed by the careful nitty gritty of implementing concepts into real life systems that work, and last but not least, Massimo Tarenghi who transformed his astronomer self into project scientist, project manager and project engineer rolled into one. His dedication to the NTT, his fondness for his team and his love of astronomy brought it all to this happy climax.

The European House of Astronomy, blessed by the riches of both hemispheres' starry heavens, is today the better equipped for our exploration. May the creative innovation which the NTT represents, inspire the ambitious collaborations which make this house such a fascinating abode.



Ladies and Gentlemen,

In my brief talk today, I shall limit myself to the single point "IMAGE QUALITY", but we should not forget that many forefront technologies are involved in the other vital aspects of the telescope (e.g. tracking, pointing, remote control). However, the image quality aspect is that where the NTT is *unique* and, we believe, a milestone in telescope development.

There are three factors which have led to the remarkable image quality of the NTT:

- (1) The concept of "active optics"
- (2) The *figuring quality* for 3 mirrors achieved by Carl Zeiss based on the active optics concept
- (3) The *building concept* around the *ALT-AZ mounting*, which maintains optimum conditions of the local air.

1. Active Optics concept

This is a perfectly classical *feedback control system*. It looks like this. A star image in the field of the telescope is fed into the *image analyser* (upper box), its results then processed in the microcomputer (lower box) which sends signals to control the position of the secondary mirror and also to the supports of the primary mirror. The key element is the on-line *image-analyser* which, with the micro-computer, defines the image properties which have to be optimized: *only that which can be measured can be optimized* (a basic principle of feedback control). The image analyser is the *brain* of the telescope which enables it to

maintain itself "actively". In contrast, a normal "passive" telescope has no brain: it has to be maintained by difficult, off-line interventions.

2. Figuring of the NTT optics by Carl Zeiss, Oberkochen

One of the two principal advantages of the active optics concept is that certain optical manufacturing tolerances can be relaxed. This enables the manufacturer to concentrate on achieving, in the technical optical sense, the extremely "smooth" surfaces necessary for the exceptional image quality of the NTT.

To realize this, the manufacturers have developed a technology, both for testing and for figuring, which is unsurpassed in the entire world. Here is a view of the primary mirror of the NTT, in its final cell placed on the turntable of the figuring machine, as set up for the final tests. I should like you to note that the mirror blank, of superb quality manufactured by Schott of Mainz, is relatively thin, another important consequence of active optics.

Prof. M. TARENGHI, ESO NTT Project Manager

Ladies and Gentlemen,

For the past 6 years I have had to act fast and be on time as Manager of the NTT Project. Today is no exception.

The NTT adventure began in 1982

3. The building concept

The total airpath from the telescope to the top of the atmosphere is part of the optical system. The "local" part near the telescope is influenced by the telescope itself, the building with its facilities and nearby site conditions. In classical telescopes with big domes, the influence on the local air has often been very negative, sometimes the worst optical effect altogether.

Let me show you with a simple analogy, as drawn by my colleague Ed Jansen, the fundamental characteristic of the NTT building which enables it to maintain vastly improved conditions of the local air.

You see here a situation which is very common for me on a hot summer's day when I get into my car on the ESO parking lot. Both myself and the car suffer acutely from the heat. So I first open the left-hand window. But this does little good: the hot air cannot escape. Then I open a fairly narrow slit in the roof, a situation already more favourable than most classical domes. But the air still cannot circulate effectively. The next stage is to open the roof fully. This brings a big improvement and both I and the car feel much better. But the last stage goes further and represents the equivalent of the NTT building: I have opened also the right-hand window, giving a through draught and full upward convection. I and the car are happy.

Now here, in comparison, is the NTT building, manufactured by the Italian firm Mecnafer, in its most open state for optimum natural ventilation: vertical walls, completely open at the top, completely open on *both* sides, although you cannot see from the slide that the back wall can also effectively be fully open.

A final word about the figure in green overalls in the foreground. This is my friend and colleague Francis Franza, without whose fundamental contribution throughout the project we would not be celebrating this inauguration today. I wish also to express my deepest thanks to many other colleagues for their major contributions.

with the entry of Italy and Switzerland into ESO.

At that time it was decided to build the NTT, a telescope of 3.5 m aperture with improved performances, able to obtain the best possible images from Earth. All



this with a budget of only 24 million DM, less than one third of the cost of a conventional 4-metre-class telescope such as the ESO 3.6-m.

The difference in concept and shape between the old and new ESO telescopes is evident in this drawing.

Now you can see how they look in reality on La Silla.

Many years of experience accumulated by ESO running the La Silla telescopes combined with the experience of many other observatories and enriched by the exploitation of new technologies have guided the NTT concept and realization.

Time does not allow me to describe at length the NTT characteristics, new ideas and solutions utilized in the optics, mechanics, building and computer control.

Now that the telescope has been integrated into its rotating building it is not entirely visible. Only at the time of the erection in Europe at INNSE (Italy) was it possible to admire the complete structure.

Even more difficult to see are three of the major technological features of the NTT Project:

- the hydrostatic bearing system which supports the 110 tons of the telescope on a thin film of oil which is thermally controlled;
- the large and very accurate roller bearing supporting the rotating 250 ton building;
- the 78 active supports in the primary mirror cell.

It is important to remember that already on the occasion of the "first light" on 23 March 1989, remote control was used to receive images in Garching via

satellite. Remote control from Europe will become a routine procedure with the NTT Telescope.

Prof. P. O. LINDBLAD, President of the ESO Council

Your Excellencies, Honoured Guests,
Dear Friends and Colleagues,

Astronomy is, as the Finnish philosopher George Henri V. von Wright would classify it, an epistemic science – the motive force of its scientific enterprise is the strive for knowledge, the urge of man to find out, for himself and independently of being told, how things are – about the universe in which he lives. Its basic psychological drive is curiosity.

The first results have surpassed even the great expectations we had at the beginning of the Project.

What counts is not only the perfection of the optics and mechanics but the unit design of the whole system, the combination of the rotating building and telescope in one machine able to produce the best possible pictures of the sky.

The NTT has opened up new observational frontiers for astronomers and it has significantly narrowed the gap between the potential of ground-based telescopes and the Space Telescope.

European industry has shown great competence in building such a large, sophisticated and sensitive instrument. I would like to give my sincere thanks to them for their hard work and commitment.

Finally I would like to thank all my colleagues with whom I shared moments of expectation, difficulties, enthusiasm, even panic, and great satisfaction.

It is this group of active people who have invented the first active telescope in the world: the NTT.

The final product of our efforts as astronomers, we think, is of benefit to mankind, but in a form that cannot be expressed in economic value or profit.

To convince our supporting governments that their money is well spent, do we have any other way than to – perhaps naively said – provide the very best.

The aim of astronomy is not to advance technology. However, to provide the very best, astronomers need the most advanced technology available.



Because of the unique and often very extreme requirements put by astronomy, astronomy has often been the driving force and inspiration to push technology to its very limits.

This is why this New Technology Telescope is such an important tool, not only to pursue the final aim of astronomy, but also to be a test bed for development of technology for our next big project, the Very Large Telescope.

Without European collaboration and generous support by our governments the very impressive constructions in the remote mountain desert of Chile could

not have been achieved. This collaboration has been of fundamental importance for the advanced position of European astronomy today.

Modern communication systems tie together the centres of our Organization. The same technique that allows us to inaugurate this new telescope simultaneously on La Silla and in Garching, however, deprives us of a good excuse to visit the beautiful country of Chile and its charming people – to enjoy the dark, brilliant starry sky of La Silla and the wonder of the central Milky Way pass over your head through the zenith.

The entrance contributions of Italy and Switzerland made the New Technology Telescope possible. Thanks to the foresight of the former Director General, Professor Woltjer, and to the ingenuity and dedication of Professor Tarenghi, Dr. Wilson and other ESO staff in Europe and Chile, as well as the skill of European industry.

This telescope, whose construction rests on the most advanced knowledge and technique, is given to European astronomers whose responsibilities it is – from now on – to use this telescope to provide – the very best.

D. HOFSTADT, Chairman of Management Team, La Silla Observatory

Your Excellencies, Honoured Guests, Ladies and Gentlemen:

Bienvenidos. Welcome to La Silla.

Twenty-five years ago La Silla was but one more mountain in this desert.

At the time scientists in Europe were planning an international observatory in the southern hemisphere. The idea was to promote European astronomy with advanced observing facilities in a site where the Magellanic Clouds, our galactic centre and other targets of great astrophysical interest could be observed.

Chile had welcomed our young organization with a Convention signed in 1963 and offered the exceptional sky transparency at the edge of its Atacama desert. Soon thereafter, this mountain was chosen and a base camp installed in the valley. Activity began – first on horse back, later by road and trucks.

It was largely thanks to French assistance that our first telescopes came to light. The Grand Prism Objective, our Galileo-type telescope came first. Soon to be followed by a 1-m, a 1.52-m aperture telescope and a set of four (4) smaller photometric units on the platform below.

Part of the original ESO agreement considered a highly detailed and deep sky survey. It was initiated in 1972 with a Schmidt telescope designed and constructed in Hamburg. By now two major atlases at different wavelengths have been completed and are used worldwide as reference maps for the southern skies.

But the most important observing facility was still to come. In 1976 our largest telescope, the 3.6-m began its scientific life. Through the years it has acquired an unparalleled set of instruments, detectors, configuration options which stimulated a vast number of scientific programmes. It also provided us with a reasonable amount of head-

aches . . .

The appendix tower on the western side contains yet another technological challenge: an innovative telescope which is connected with a highly efficient spectrograph located in the main building, a powerful and unique tool for high-dispersion spectroscopic work.

As our organization was growing, two institutes in Europe, the Copenhagen University and the Max-Planck-Gesellschaft in Germany entrusted us their instruments. A 1.5-m and a 2.2-m telescope found their home base at La Silla. The same occurred recently through collaboration with the University of Gothenburg in Sweden when we brought the largest sub-mm telescope, south of the equator, into operation, thus extending our observing bandwidth capacity to the longer wavelengths.

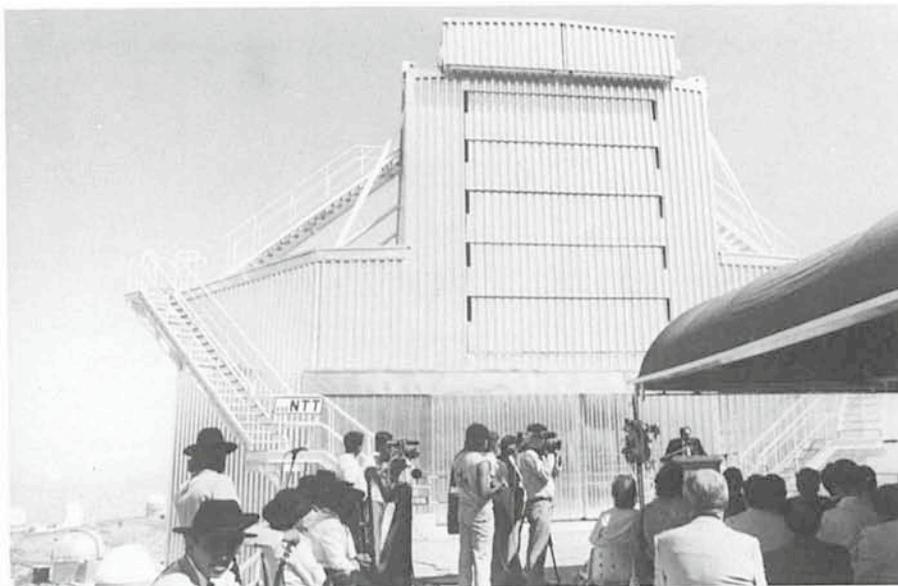
Meanwhile our Italian and Swiss colleagues maintained a keen interest in our evolution and realized that La Silla had still some space for . . . another telescope. In 1982 these two countries

formally joined our adventure adding new resources and ambitions which have materialized now into the New Technology Telescope in front of us.

New technology in the domain of optics, structures and communications had been tested and was not unfamiliar to our staff. Clearly, the time had come to crystallize our ideas and courage into a different challenge. And today we are about to turn over to the scientific community a truly exceptional tool to reach a deeper grasp into the universe.

But maybe the most important aspect of our brief history is that our observatory has developed its own soul. Through a quarter century we have learned and consolidated our own road to the challenge of the future.

I wish to end by thanking all my colleagues who have worked and sweated for the success of our enterprise, sometimes with great sacrifices. I can promise that much more sweat and work will be required to demonstrate that what we are claiming will become true.



Distinguished Colleagues, Mr. Director General, Ladies and Gentlemen,

It was with great pleasure that I accepted the Organization's kind invitation to be present here today, on the occasion of the opening ceremony of the NTT telescope. A telescope that, with its innovative conception represents the first operational application of the new technologies developed by the European astronomical scientific community with the contribution of the industrial sector.

Today's event has a particular meaning for Italy. The approval of this project has been promoted with great determination by my Government. By entering ESO, Italy has intended to give an essential contribution to the construction of the NTT. Our researchers, first of all Professor Tarenghi, the Project Manager, and our industries have accepted with enthusiasm the invitation to collaborate.

This support, which was already unreservedly expressed in the past, has been confirmed by my Government also for the future.

Along the developing line of the NTT, it has been recently decided to start an even more ambitious project, aimed at providing the European astronomers with an optical observation instrument which will be one of the most powerful in the world: the VLT, for the construction of which the experience and the results of the NTT, starting its operative life officially today, will be invaluable. This was also a decision supported with resolution by my Government; I remember that my predecessor was the first, among the Research Ministers of the Member States, to publicly express a favourable opinion of this project on the occasion of a congress held in Venice.

We supported the VLT at that time and we still support it today because Italy firmly believes in the value of the international scientific cooperation, particularly because we wish to best contribute to enable ESO to maintain the pre-eminent role it has reached in the world today. The policy of our Government and of our researchers shall always aim at eliminating obstacles coming between the reaching of such a goal and at letting the possible problems find a positive solution to enable a satisfactory course of the project and of the organization in its entirety.

The development of a broader and broader international cooperation is one of our priorities and we intend to give it a significant contribution, strengthening, at the same time, national programmes.



This is therefore the clue to interpret our firm support for ESO's development. We still intend to guarantee, on the one hand, our support in the future to ESO, and on the other hand, to favour the launch of great national initiatives, such as:

- the project of building a second supertelescope, the Columbus, which is going to be placed in the northern hemisphere and which will thus be a complement of the VLT;
- the construction of the national telescope Galileo, with a diameter of 3.5 metres for which project the technologies set up for the NTT will be made available.
- the further development of the VLBI European network with the antennae of Bologna and Noto and, possibly, even others.
- the close scientific and technological cooperation between earth and space astronomy.

On closing this address, and confirming once again Italy's full satisfaction with the results obtained, I wish to express, Mr. Director General, my sincere thanks to all who contributed to the success of the initiative with their efficient work and especially:

- to Professor Woltjer, who preceded you, for taking the Organization to the vanguard of world astronomical

studies and for having wanted and almost brought to its conclusion the NTT and for having contributed in a resolute way in the early 80's to our decision to enter ESO.

- to you, Professor van der Laan, for having taken over with equal enthusiasm the spirit of Professor Woltjer's work and for all that will be done in the future to maintain the level of excellence of the Organization, fostering the general agreement of objectives which is absolutely necessary.
- to Professor Tarenghi and the entire staff, particularly to Dr. Wilson, responsible for the optics, for having made the building of the NTT, with their daily efforts, possible.

I am thoroughly convinced, Mr. Director General, that thanks to the efforts made up to now, by your managers and by all researchers, ESO has now reached its full scientific and technological development which enables us today to look with optimism at more ambitious future goals.

To the benefit of all the European scientific community, I give thus all researchers and all those who are involved in the activities of ESO my best wishes for their future work and for further significant success like the one we have seen today.

Ambassador J.-P. KEUSCH, Director of the Directorate of International Organizations, Bern, Switzerland

Your Excellencies, Director General, Ladies and Gentlemen,

The inauguration of ESO's New Technology Telescope is a very special event in the history of European scientific and technological cooperation. It is therefore with great pleasure that I participate in these celebrations. Let me first convey to you the greetings of the Swiss Government and in particular of our foreign minister, Mr. René Felber, who was unfortunately not able to attend.

Compared to ESA, the European Southern Observatory is small in terms of its budget and number of persons, but the events we are watching and indeed participating in are proof that a successful scientific endeavour, even in our times, must not necessarily cost billions. Not only are we inaugurating today the world's most modern and most performing optical telescope, we are also writing technological history by operating this instrument, high on a mountain top on the other side of the world, by remote control via satellite from here at Garching.

For some of us, it might be perhaps just a little disappointing not to be physically at La Silla, not to have the material feeling of what we have built together. To me, I must admit, this is quite fascinating. We have watched Minister Ruberti actually operating the telescope and we have seen on this screen how his command was diligently executed. What a spectacular change to the decision-making and executing process we are accustomed to, where long chains of commands and elaborate organizational structures usually prevent us from actually seeing happen what we want to realize! Here we see in real time and I am looking forward to my turn in a minute for pushing this button.

But let me briefly turn back to the history of the NTT. When Switzerland



took the decision to join ESO at a late stage, almost 20 years after the entering into force of its Convention, it could have been interpreted as a lack of interest and collaboration spirit in the frame of European scientific and technological integration. Reality was somewhat more complex, but today we see a positive aspect of our delayed entry.

Because we joined late we had to pay the handsome sum of DM 6 million as an entry fee and it became available immediately. Together with the even more substantial Italian contribution, it has been a decisive element for ESO. All this money went into the construction of this beautiful new telescope. I dare say it would not have been constructed so rapidly if it had had to go through the normal budgetary processes. The Italian and Swiss entry fees have been transformed into this splendid example of scientific ingenuity and technological innovation.

With the commissioning of the NTT, its exciting career as one of the world's outstanding scientific instruments now officially begins.

The other key role of our new telescope is of course that of a technological predecessor to the Very Large Telescope (VLT), decided by the Member States in December 1987. This time there is not such a special contribution. ESO's budget will have to be increased considerably, but I am confident that Member States will honour their commitment and that the Executive, building on its experience with the NTT, will cope successfully with this new challenge.

Let me conclude by extending the Swiss Government's most hearty congratulations to the European Southern Observatory and to its brand new and shining telescope. In pushing this button, I would like to wish it all the best for a long and brilliant career.

Dr. H. RIESENHUBER, Federal Minister of Research and Technology, Bonn, F.R. Germany

Meine sehr geehrten Damen und Herren, als deutscher Minister begrüße ich Sie besonders gern in deutsch.

Pero al mismo tiempo quiero saludar a las Excelencias y a nuestros amigos en La Silla que han contribuido tanto durante los últimos años para el éxito de nuestro trabajo aquí.

Knowing that I have to submit myself to the lingua franca of ESO – during the past 27 years it was English – I herewith wish to welcome all of you very heartily, especially our new partners from Switzerland, from Italy, Prof. Ruberti, Botschafter Keusch, who have contributed to the success of this work, not only by pushing the button in such a brilliant

way, but by joining this common effort as good partners on a long way which we will continue to walk together.

Astronomy is the oldest science we have got. From the stones of Stonehenge to the lenses of an NTT was a very long way, but what was the driving power over these years was the curiosity of mankind to discover what is



behind it all, what we can understand, to see the changes of the unchanging, and to find out which new instruments we must erect in order to understand what we have not yet found.

On this long road, NTT is the most elaborate and the most modern instrument we have worldwide. It has been shown in the way the new technologies have been implemented, it has been shown in the way we have used the most modern devices of micro-electronics, of control, of new equipment-sharing systems. This all has led to a unique instrument for our science. It is a technical masterpiece. It has already shown what it can do. But let me state that it is a financial masterpiece as well. Not only because it costs one third of

the last generation of telescopes with the same mirror diameter, but also because ESO managed to stick to time schedules and cost schedules and this is an extremely important thing.

It has been stated that we are now embarking on a new generation of telescopes with the Very Large Telescope project. This is a challenge. A large telescope, a very costly telescope, and we have to cooperate with each other so that it will be a success. It will be a challenge for the management. ESO has decided not to use a prime contractor, to do on its own responsibility this job. This means that in the forthcoming years, all efforts must be directed to this very subject. The challenge is also a financial one and I am looking very

much forward that, in the same way as it has just been shown, ESO will stick to schedules for the VLT, time-wise and money-wise.

I will not comment in detail the technical achievements we have in front of us, the combination of large-scale optics, of sensor and control technologies, of micro-electronics, of new manufacturing and measuring systems. This has been important, not only for this telescope, but also for a new generation of engineers as well. I do think that our industries will make excellent use of these new possibilities.

Ladies and Gentlemen, what we are inaugurating now is a new instrument for the science. During the past years, young scientists have become accustomed to cooperate with the best possible instruments and in the best possible spirit. This is also the task of the future. I think that we must all get used to understand that jointly we can achieve goals that are beyond the reach of any single nation: in basic research, in coping with the problems of the environment, in new and very large technologies. I believe that what we have here is a piece of equipment that demonstrates the importance of applying excellent instruments to pure science. This is a challenge for the young generation which gets together in joint efforts that are always above the possibilities of individual countries.

In this spirit I wish a good success to NTT, to the coming VLT, to the spirit of our scientific community, and to the integration of all our scientific nations into one world-wide community. May they successfully climb the steep path into the future!

Monsignor COX, Coadjutor Archbishop of La Serena

Dear Brothers,

The brotherly cooperation of people, institutions and countries has made possible the installation of this new telescope, a wonder of modern technology. With it, scientists will explore space and heavenly bodies and we will be able to know better and admire better the universe in which we live.

Its immensity astounds us and will always be the object of scientific investigations, but the human spirit will also search for the origin and the sense of everything which exists. This cannot be answered, not even by the most perfect scientific instrument. It is the domain of philosophy and, in the last instance, of faith.

Let us listen because of this with humble respect to the words of the holy

scriptures in the first chapter of the book of Genesis:

"In the beginning God created Heaven and Earth. And the Earth was void and empty and darkness was on the face of the deep. And the spirit of God moved over the waters and God said 'let there be light'. And light was made and God saw that the light was good."

And with our thoughts in God, let us ask for his blessing so that the use of this telescope will always be for the service of peace, for the real good of man and honour of our Creator.

Benedictio deo omnipotentis. Patris et filii et spiritus sancti descenda su per hoc instrumento et superomnis qui cum colaborant et maniat semper.

In nomina patris et filii et spiritus sancti, Amen.



Messieurs, Collègues!

Après le geste symbolique et très émouvant de Monseigneur l'Archevêque de La Serena, j'ai le devoir un peu ingrat de vous ramener du ciel vers la terre.

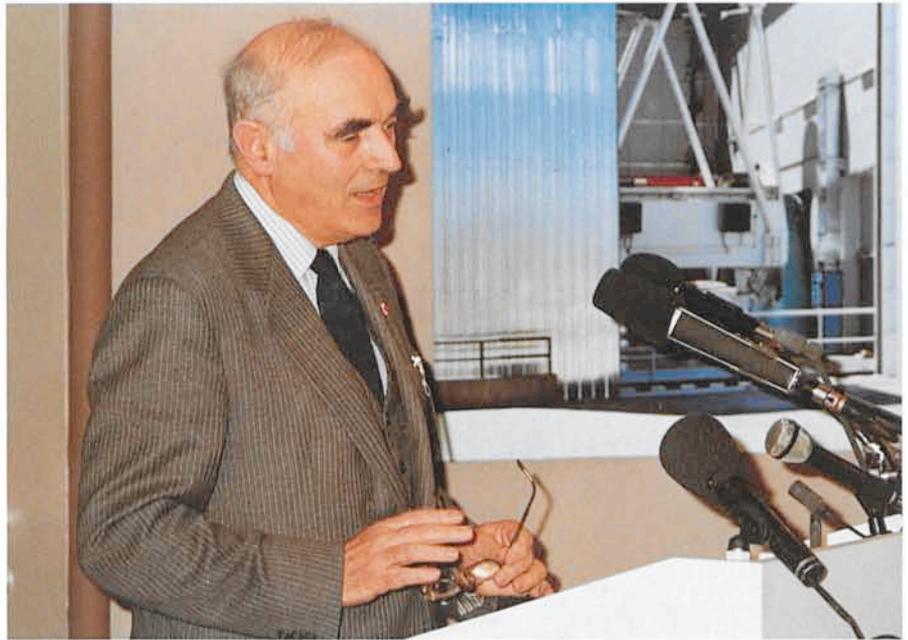
I would first underline the major interests of European associations, of European organizations like ESO. ESO is not the first one, it's not the biggest one, but it is one of the most interesting ones, of the most fruitful ones. Now being an astronomer in Europe, it is a must to cooperate with ESO, as it is a must for particle physicists to cooperate with CERN, as it is a must for a space scientist to cooperate with ESA. We needed some organizations in Europe, we now have this and we are very happy to see how efficient they are.

A second point concerning ESO is that it is a very big centre for studying instrumentation and not only instrumentation for telescopes. All what you have done here in the frame of ESO is indeed very fruitful, very useful for astronomers, but there are also many technological spin-offs, useful in many fields of physics and mechanics. I think that also for Europe this is really of great value.

Another point I wanted to say is that here at ESO there is a place where people meet to discuss their plans, their hopes and their needs for the coming years. We need such places in Europe within the big fields of science, places where people can meet informally, discussing, asking for something – asking from time to time a bit too much – but it's always interesting to have the measure of the maximum. I can assure you and I'm sure that our colleagues here are of the same spirit, that on the side of the governments we are really doing all the best we can to improve the situation of our scientists. Well, it isn't so bad in our countries, in Europe!

What we did achieve, for example in astronomy, is a model we can follow in other fields in which we have no such cooperation yet. For instance, what do you think about the possibility to have such a cooperation and coordination in oceanography? We have very great ambitions in our countries in Europe. There have already been very important national achievements in oceanography, but I think we could make more if we had something like ESO in order to discuss plans and to see in which directions we should move within this very important field of activity.

I will not be too long, but I would like to make a last remark: Pushing a button, our colleagues have shown that it is very



easy to control from here something which is almost at the antipodes. But of course it is easy. Is it not easy to control a satellite which is turning around Venus or going to the very end of our planetary system? The geography now is not at all what it was 20 or 40 years ago. When we are achieving some projects for science we can now think in more global terms – and not only European ones. More and more we will go in this direction, for instance if we think about meteorology or environmental studies. More and more we must have this in mind and more and more we can also realize this.

In conclusion, je voudrais vous souhaiter à tous, à l'ESO, à tous les collaborateurs de l'ESO le meilleur succès, un superbe résultat pour ce télescope qui vient d'être béni et inauguré et aussi une très belle réussite pour la prochaine étape, le Très Grand Télescope. Merci.

Editors note: The speeches by Prof. van der Laan, Dr. Wilson, Prof. Tarenghi, Prof. Lindblad, Mr. Hofstadt and Prof. Ruberti have been reprinted from written texts received. The texts by Ambassador Keusch, Dr. Riesenhuber, Monsignor Cox and Prof. Curien are slightly edited transcriptions of the recorded speeches.

First Announcement
ESO/EIPC Workshop on SN 1987 A
and other Supernovae
17–22 September 1990

A joint ESO/EIPC workshop on SN 1987A and other supernovae will be held from 17 to 22 September, 1990, at the Elba International Physics Centre, Marciana Marina, Isola d'Elba, Italy.

Topics of the workshop:

- SN 1987 A compared to other supernovae
- X-rays, UV, optical, IR and radio observations
- Models and synthetic spectra
- Explosive mechanisms and nucleosynthesis
- Molecule and dust formation
- Pulsars and late-time energy deposition

Organizing Committee:

I.J. Danziger (ESO), F. Ferrini (Pisa), W. Hillebrandt (MPI Garching), L. Lucy (ESO).

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