

Great moments in my Swedish Space History

A very personal selection

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- **I must admit I am hopelessly romantic about spaceflight. I suppose that is why I was asked to give this short presentation about high points in Swedish history. From my own very personal perspective, I might add.**
- **Would you believe that Alfred Nobel, the Swedish inventor behind the Nobel prize, was involved in space activities.**

1896

Alfred Nobel files for patent for rocket-borne camera

Fig. 1.

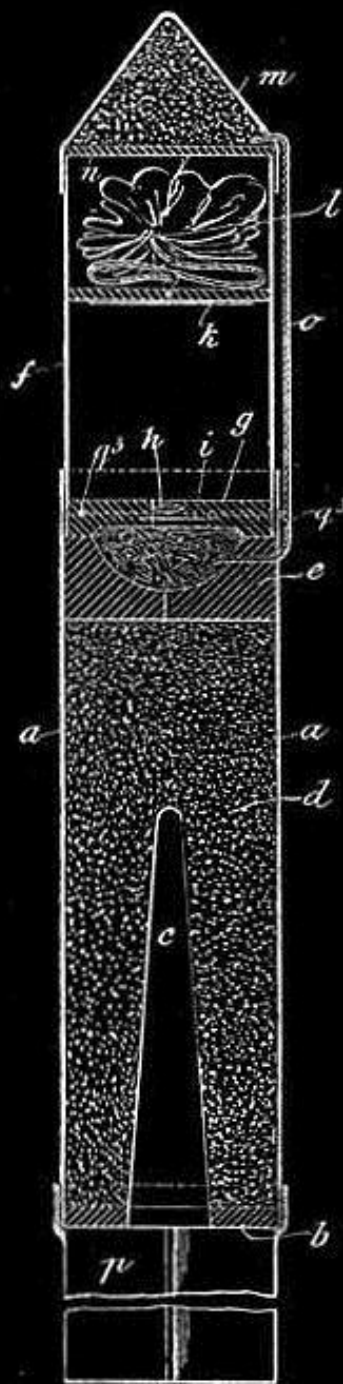


Fig. 2.

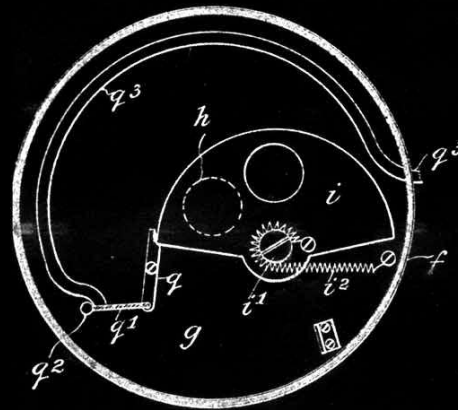
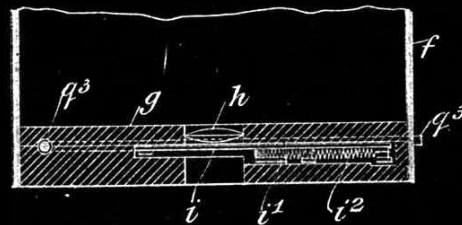


Fig. 3.



- **Alfred Nobel worked together with another inventor working on rockets, or as they were called: “aerial torpedoes”.**

1908

Unge's "Aerial torpedo"



The Krupp company buys the patents for solid propellant rockets from Swedish inventor Wilhelm Unge (1845-1915)

- **Well, after Lt Col Unge's efforts not much happened until 50 years later, when the first ever space conference was held in Sweden.**



SVENSKA
INTERPLANETARISKA
SÄLLSKAPET

1960



XI th Astronautical Congress in Stockholm
"v. B" at press conference

- **I was 14 years old. Did I get his autograph?
You bet your sweet something, I did!**

16 August 1960

Krüger von Blauke

- **By this time the space age had started and the year after it reached Sweden. As you will see in the next slide media attention was intense.**

1961



First rocket launched into space from Sweden, 14 August 1961

- **This rocket was launched at a military range and released talcum powder at the edge of space to simulate something called noctilucent clouds which exist at 80 km altitude in the summer, If you stay another three weeks, you could see them in Stockholm. This is what they look like:**



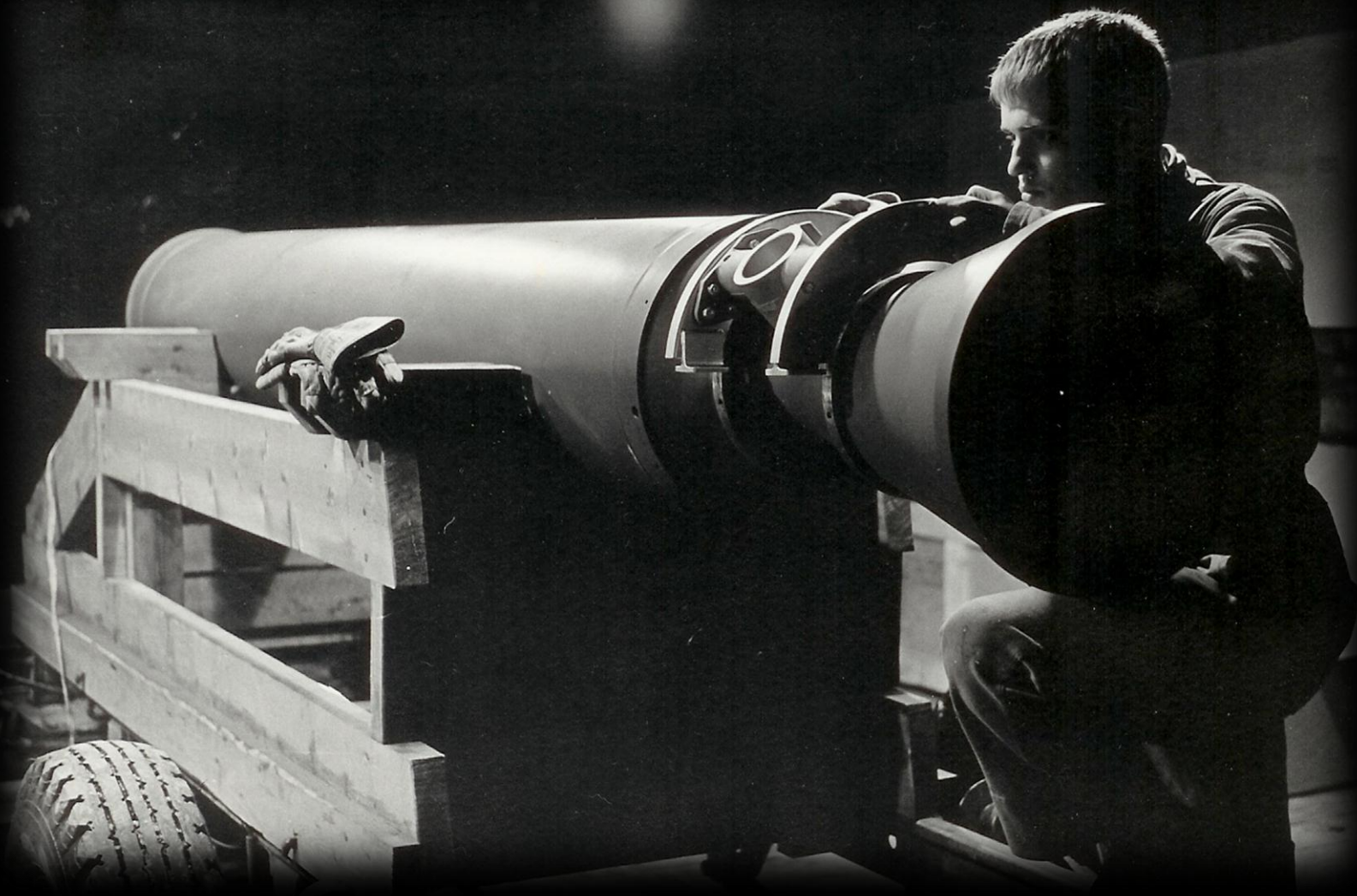
- **They are still a scientific riddle. Last summer a rocket was launched to explore them. Let's go back to the early sixties. Of course I was building my own rockets. And this is the last one I worked on as an amateur:**

1962



- **Just six months later I was working on a real space project. Sounding rockets to explore those elusive noctilucent clouds.**

1962



I get my first space job – assembling sounding rockets

- **Where was this? Our present Swedish space operations center at Esrange? No**

1962-1964

Kronogård – an interim rocket base before Esrange



- **It was an abandoned farm just outside a military range.**
- **While all this happened, the heroic phase of the space age played out and it affected us too:**

Rymdhjältarna

J.GAGARIN

&

V.BYKOVSKIJ

Hedersgäster vid stor



KOSMONAUT- BAL

STOCKHOLMS STADSHUS, BLÅ HALLEN,

FREDAGEN 6 MARS KL. 20⁰⁰ - 0.30

SVEN-BERTIL TAUBE

GUNILLA SÖDERLIND * EDDIE McANDREWS

BERIT CARSTEN

Biljetter á kronor 8:- i
tidningarnas depesch-
kontor, på PUB och NK

5 grammofoonskivor med Gagarins röst
från rymden till jorden med hans och
Bykovskijs autograf utlottas på biljetterna

Arrangör:
Sällskapet Sverige-
Sovjetunionen

1964

My camera malfunctions when the
heroes appear in public in Stockholm

Yuri Gagarin visits Sweden in March 1964

- **At about the time when Gagarin was here the decision to build the rocket base Esrange in the far north was taken and two and half years later rockets started to be launched from there. AND – we have launched many rockets.**

1966...



- **Only some one really enthusiastic about space would show a picture like this, don't you agree? So I will show another one!**



- **In the early 70's Sweden took over Esrange from the European Space Research Organization and right away we started to improve its capabilities, like being able to launch to higher altitudes .**

1976

NASA, Wallops Island, Virginia



My first job at SSC: the S-19 sounding rocket guidance system

- **No, this not the Dalton gang, it is people involved in a test of a rocket guidance system for Esrange.**
- **In the 70's the groundwork was laid to today's space operations at Esrange. High-altitude rockets and satellite operations facilities .**

1978



1991



- **Space operations certainly are not routine, and this particularly applies to launching rockets, which you can see on the next slide.**

2005



**The space
operations credo:
"Get the data back"**

- **My experience in tracking satellites professionally is somewhat limited but I am an enthusiastic amateur space tracker as you can see in the next slide:**

Tracking Apollo-17 on VHF, Titusville, Florida

1972



- **No, it is not one of the BeeGees, it's me tracking the last Apollo to the Moon.**

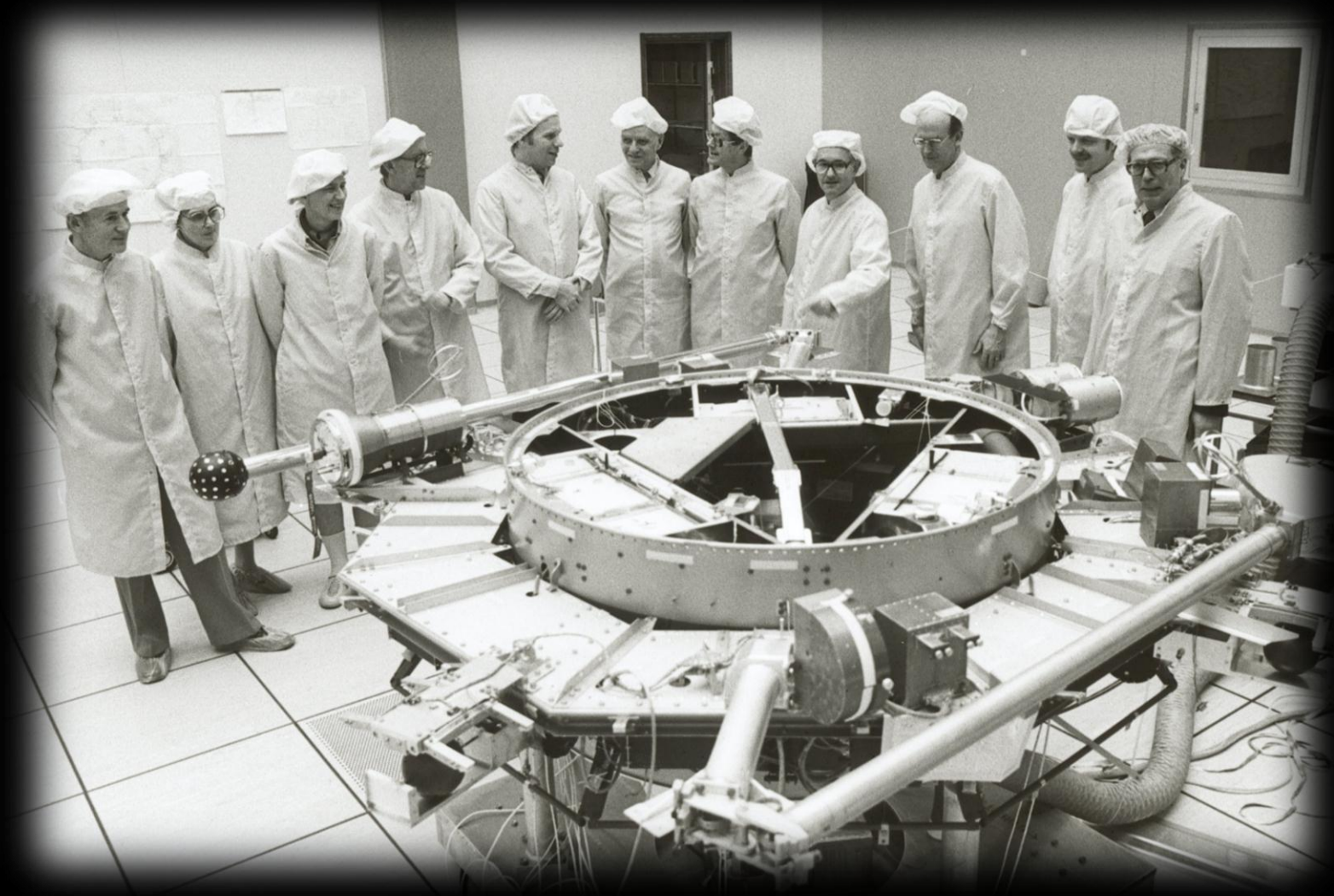
1976

I meet Apollo-17 pilot Ron Evans



- **A few years later I got to meet one of the crew members of Apollo-17. I am the one on the right, if you wonder!**
- **In the 80's Swedish space activities picked up and in 1986 Sweden's first satellite, Viking, was launched to explore the aurora. I was deeply involved in this project. Boeing and Saab built the satellite. We have to do something about these stupid looks hats, don't we?**

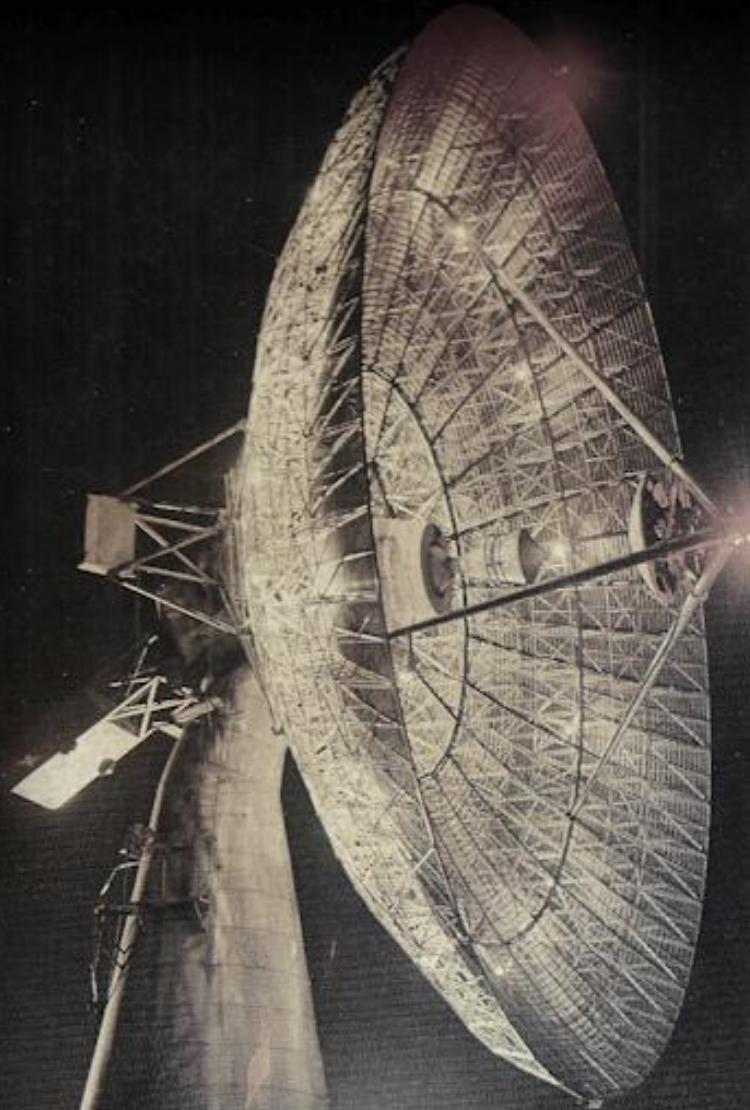
1986



Viking, Sweden's first satellite

- **Sweden started experimenting with telecom satellites already in the 60's using early low orbit satellites that gave 20-minute long contacts with other continents .**

1964 – 1967



Satellite communications experiments, 25 m dish near Gothenburg using NASA's Relay I & II satellites in LEO

- **In the 80's Sweden took the initiative to develop a Nordic TV- broadcasting satellite.**

1989



Tele-X, 1989-1998

**Strongest TV-satellite ever makes Sweden a pioneer
in Direct-To-Home satellite broadcasting!**

- **Isn't this satellite pretty – blue and yellow. I worked on this project too, It was a technical and commercial success.**
- **In the 90's we started building our own satellites and I had the chance to manage this project: The scientific satellite Freja, which was launched from China. Germany was an important partner in this project.**

1992



Freja – the first satellite entirely designed and built in Sweden

- **And we built some small ones and I really believe in such itty-bitty satellites.**

Astrid-1, 1995



Small and even smaller

Munin, 2000

Astrid-2, 1998

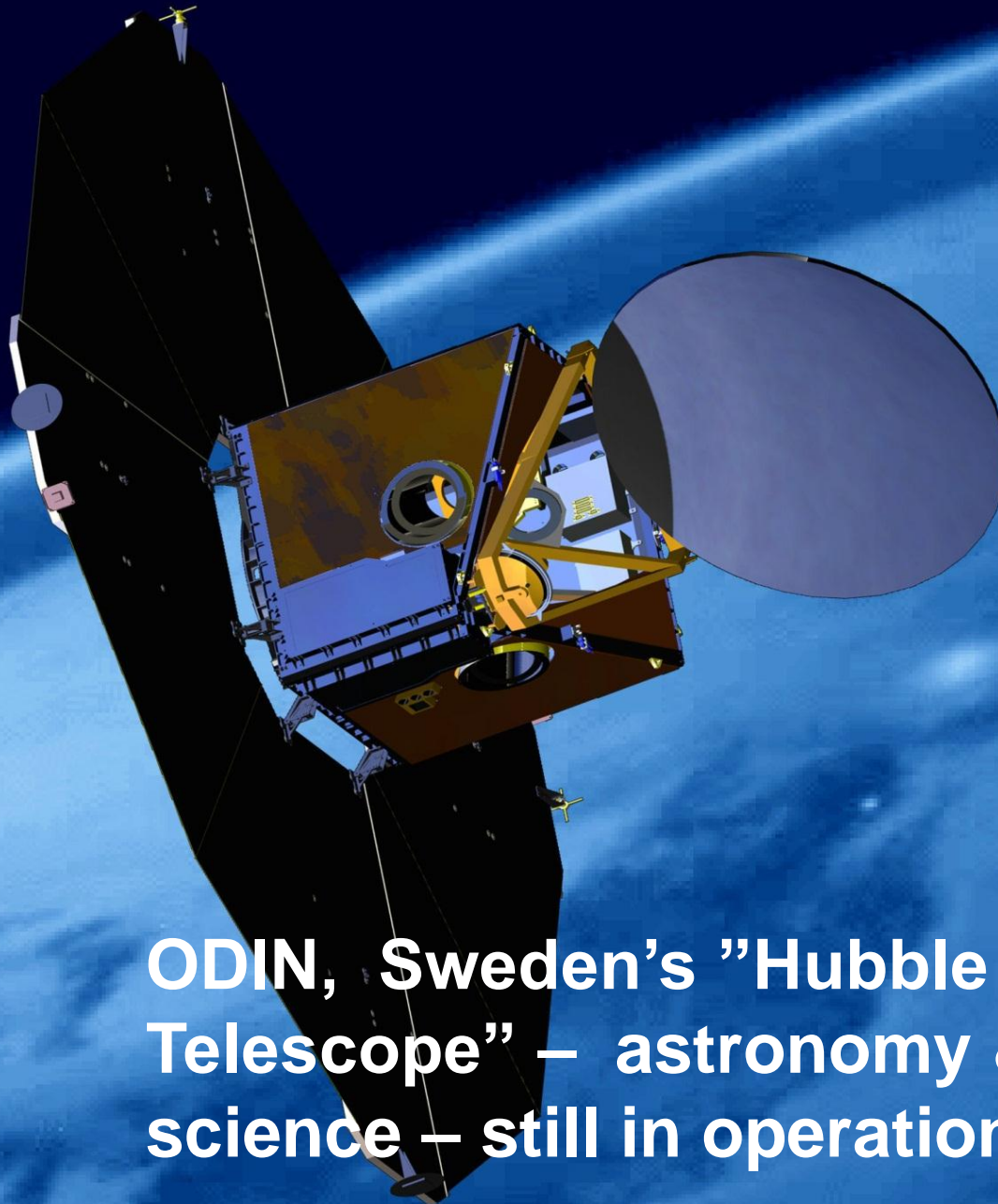


- **BTW, Astrid-2 carried something special into space:**

W. A. R. 1970.

- **The King's signature. I remember Your Majesty asking me who would read this. I still don't have a good answer, I am afraid.**

2001



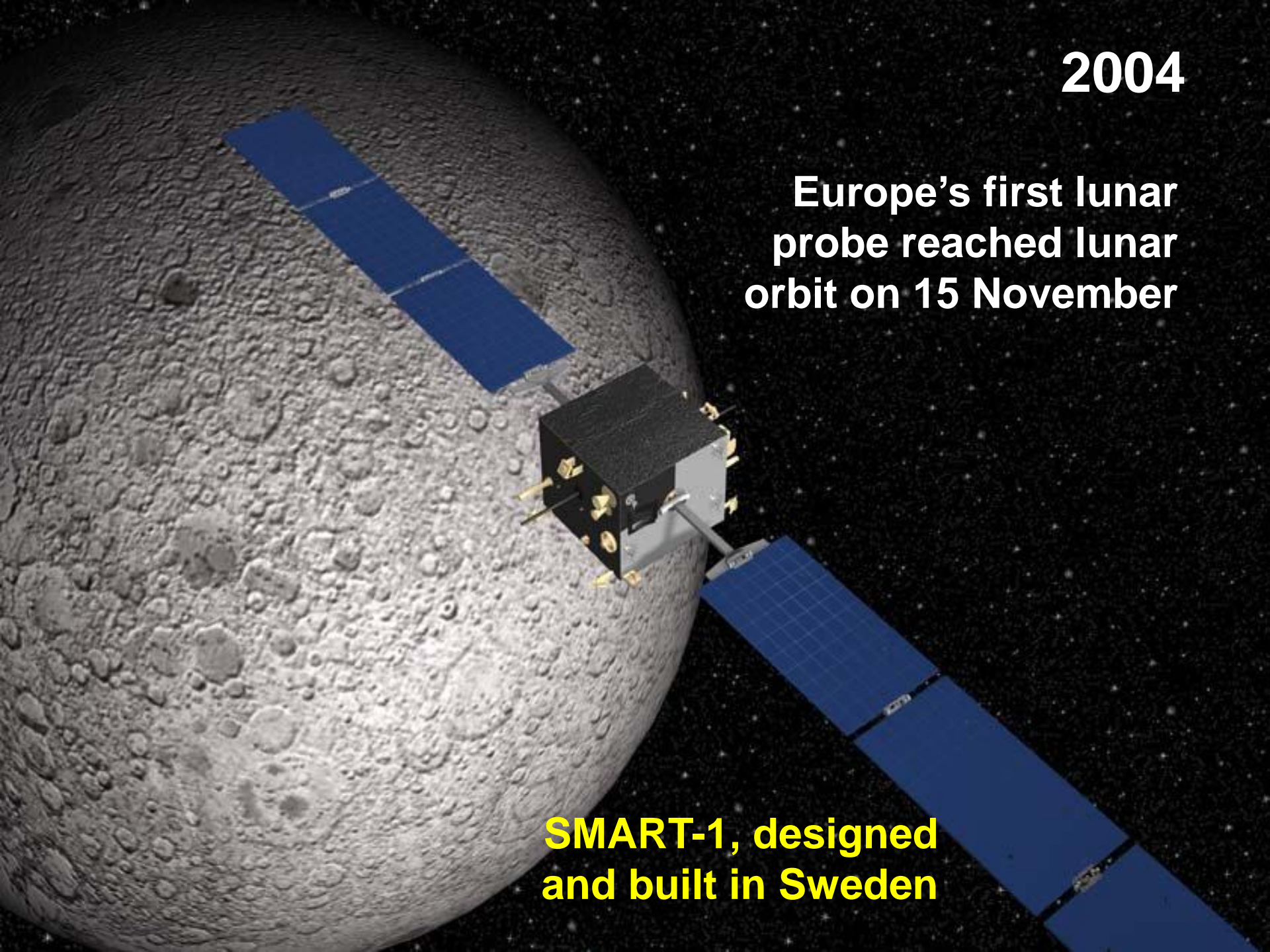
ODIN, Sweden's "Hubble Space Telescope" – astronomy & climate science – still in operation

- **To use a commercial figure-of-speech from a well-known Danish brewery: “Odin, probably the best satellite in the world”. I am really proud to have been part of this project. And also the next.**

2004

Europe's first lunar probe reached lunar orbit on 15 November

SMART-1, designed and built in Sweden



- **Sweden helped Europe reach the Moon. In the exhibition hall you can see a scale model of SMART-1 crash into simulated lunar soil – a box of cat litter, in fact.**

2006



Christer Fuglesang's first flight



- **And in 2006 we finally got a Swede into space. Here crown princess Victoria talks to Christer and Tomas Reiter.**

2007



- **Well, here is someone who wants to widen the group of people who go into space- sir Richard Branson. Perhaps his operation will come to Sweden. We got 10 minutes with him. The fellow on the right is Olle Norberg, head of the Swedish Space Agency. This is slightly off topic, but the next picture is not:**

2007



His Majesty King Carl XVI Gustav gives me a fine medal

Thank you again, Your Majesty.

2007



Real space nerds celebrate Sputnik's 50 th anniversary

The same year we at SSC celebrated again.

2009



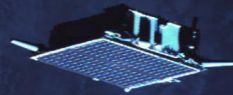
FUGLESANG SUITES

WELCOME

Christer Fuglesang flies again

And in 2009, Christer flew into space again and the hotel in Cocoa Beach certainly were aware of their guests were – the Fuglesang clan.

2010



PRISMA formation-flying. A space operations masterpiece

My only involvement in this space technology masterpiece is giving it a name. It is an acronym, but I will only reveal it privately.



SpaceOps 2012

Stockholm

- **Well, soon we will kick off what I think is “probably the best space conference in the world.”**
- **When I had come this far in preparing this talk I thought – how lucky I am to have live in the space age. What fantastic things I have experienced in this field. To show what I mean I added one more picture.**

Collier's

March 22, 1952 • Fifteen Cents

Man Will
Conquer
Space Soon

TOP SCIENTISTS
TELL HOW IN
15 STARTLING PAGES

1952

Wernher von Braun's
series of articles –
"von Braun's plan"

- **Collier's magazine in March 1952. "Man will conquer space soon". This was written sixty years ago. What will happen in the next sixty? Today's teenagers will know in due time.**
- **THANK YOU.**