

Report on Cornelius Van Drebbel:  
Underwater Exploration



Written by – Laura F Mears

Submission date- 25/05/09

For the attention of- Mark Hetherington and John O'Neill

Word Count- 1460

Contents	Page Number
1. Introduction	3
2. Research Methods / Plan	3
3. An overview of Cornelius Van Drebbel	3
3.1 An investigation of his work	4
3.2 The impact of his work on society	5
4. Conclusion	6
5. Evaluation	6
6. Bibliography	7

#### List of Figures

(Front cover- Cornelius Van Drebbel)

Figure 1- Time Line

Figure 2- Artists Impression of submarine in Thames

Figure 3- Maritime Submarine

Figure 4- Submersible Explorer

## 1-Introduction

This report has been requested by Mark Hetherington and John O'Neill as part of the Communications unit and the Science and Technologies in Society unit. The report has been made so as to convey to the reader the importance and impact of the works and forward thinking of Cornelius Van Drebbel at a time in human history when such leaps in knowledge of what was and could be possible have shaped our society today. It is to be submitted on May 25 2009.

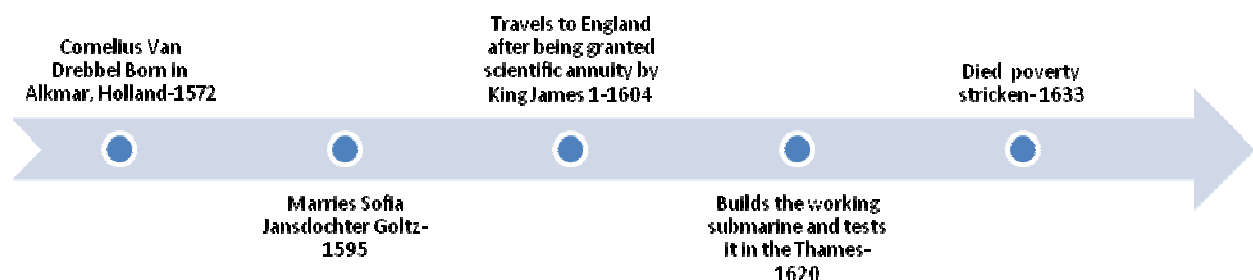


Figure 1: Timeline of Drebbel's life

## 2- Research methods / Plan

For this project, a number of research methodologies were used. In this case I used websites and books from the library.

In this project I aimed to discover the following;

Who was primarily responsible for the development of underwater exploration?  
What other information was there on the inventor and did he have any other inventions.

When and where did it take place?

How this discovery had been of benefit to society.

Before 03/09/08 I chose my subject area and "Hero".

Having chosen I could start my research.

Before 28/10/08 I had most of my research completed and began to report my findings.

Before 25/11/08 I had an outline ready to be submitted.

By 25/05/09 the final draft was ready for submission.

## 3-An overview of Cornelius Van Drebbel

Cornelius Van Drebbel was born in Alkmaar, the Netherlands, 1572. As a young man he was taken in as an apprentice to a local engraver, Michael Sendivogius, who worked in Alchemy and Mechanics. Learning what he could from his tutor

and progressing to have an affinity for such work, he moved to London where he was granted annuity by King James 1 to carry out further scientific work.

He built the first working submarine for King James 1, who subsequently was the first ever monarch to travel underwater and a ceremony was held to show it to the British Admiralty as a new type of potential war craft. Unfortunately they were not interested at this time.

### 3.1-An investigation of Cornelius Van Drebbel's work

His previous work in alchemy allowed for him not only to tackle how to build something that made underwater travel possible, but to make sure life was sustained whilst doing it. To combat the problem of carbon dioxide build up, he not only used a rudimentary form of air tubes that ran from inside the sub leading to the surface and held by floats, but also devised a re-breather system using heated potassium or sodium nitrate. This was achieved by using a heated metal pan that gave the chemical reaction where oxygen was emitted which at the same time would turn the saltpetre into sodium or potassium hydroxide. (The hydroxide would tend to absorb the CO<sub>2</sub>). These two methods together gave the submarine several hours' worth of submergence time. The submarine itself looked like two wooden row boats, one upturned on the other. The wood, most likely a native pliable pine, was sealed with a tar to make it watertight. The power for movement through the water was generated by oarsmen, with the oars sticking out of flexible leather seals in the hull. It was capable of holding 16 men at a time and travelling of a depth of three to four meters. When it was tested for the king and admiralty, it was taken in a three hour long journey in the River Thames, travelling from Westminster to Greenwich and back.



Figure 2: An artist's impression of the submarine in the Thames

Unrelated to his work on the submarine, but still a credit to the man's intellect and his contributions he also had other successes that have been of major scientific and daily use, such as the thermostat, an egg incubator, a type of red dye and the double convex lens microscope.

### 3.2- The impact of his work on society

Since that time to present day, the need for underwater travel and the ability to explore our oceans has been exploited thoroughly. With many others using Cornelius's submarine as a guide, the technology has become such that the oceans crust is the limit- at least so far. We have progressed from using submarines as a means of warfare, with end results that have shaped countries places in history and exploration of the deepest depths of the watery seas below, to using it for our personal gain.



Figure 3: Maritime Submarine

We now use underwater machinery to allow us to lay cables on the sea bed which are used as a means of communication between the world's nations. Teams of scientists have delved into the depths using one man submersibles in the hope of finding new species. An example of such an expedition would be a study that found 898 species from more than 100 families and a dozen phylia in an area the size of a tennis court. More than half of these were new to science. In the search for new medicines we have turned from the rainforests to the sea beds. As the ocean covers 70% of the earth the life and the knowledge within it, is of utmost importance to humankind. The diverse ecosystem that we live in is without doubt in ever increasing danger from overpopulation and the green house effect, and to understand and combat this we need to know as much as possible about how to sustain it and a good start would be to know what effect we are having under the water – where we tend to be able to ignore any ill effects as they are not directly visible to us and Drebbel's early investigations have allowed ours to proceed.



Figure 4: Submersible explorer.

#### 4-Conclusion

- Each year, it is estimated that 3 times over as much rubbish is dumped into the oceans as the weight of the fish we have caught.
- Leading marine biologists and explorers such as Jacques Cousteau are able to help us see the damage we are doing by using technology based on the first submarine ever built, and are also able to show it to us in a way we understand such as biological reports and documentaries.
- Due to tense international relations we are able to have a marine and coastal defence with maritime submarines.
- We are gaining new medical knowledge through research into uses of marine vegetation and sea life.
- We are getting a better knowledge of how our world works in relation to what is happening under the sea and its structure in terms of depth and crust.

#### 5-Evaluation

As projects go, I found this slightly tough as when I chose the topic I went for something I was interested in as opposed to something there was a lot of information on and I think it may have been to my detriment.

There was a lot of conflicting information coming to light when I was doing my research and so I have tried to only use sources that looked credible. There was also the problem with it being so long ago that it took place, so some of the information would appear to be more stipulation than fact as no real notes or documentation were made at the time.

From this project I have learned that when it comes to assignments it is always best to make sure that you have a good outline and structure ready before hand so you

are able to focus more on what you are writing and trying to convey to the reader than how you are writing it. It is also a good idea to make sure that there is a plentiful amount of information on the subject you are undertaking before you make a final decision. From a personal point of view I prefer a report that has a more colloquial tone so that the reader doesn't struggle to take in what they are reading and I think this is what I have achieved.

## 6-Bibliography

Information from this report was obtained from the following sources;

### Books

- National Geographic Magazine
- World Encyclopaedia
- World register of marine species (WoRMS)

### Websites:

- <http://www.pepysdiary.com>
- <http://www.nationalgeographic.co.uk/history/>
- <http://www.bbc.co.uk/>
- [www.http\wikipedia\corneliusvandrebbe](http://www.wikipedia.com/corneliusvandrebbe)