The works and life of archimedes

The Great Mechantc Not much is known about Archimede's life. He was born in Syracuse on the eastern coast of Sicily. His father was an astronomer named Feidias. Hisfamilywas probably quite prosperous, despite many contrary beliefs and opinions, as he was accompanied by servants wherever he went and also travelled, which at that time was very costly.

Unlike different spiritual men of his time, he did not travel to other countries, except one, and that the city of Alexandria in Egypt, where at the famous nstitution, Musaeum of Alexandria, he consorted with famous scientists like Conon the Samian, Dositheos, Eratosthenes of Cyrene and others with whom he kept regular contact with, by sending his work to them and asking for their opinion before it was published. The exact time of his stay in Alexandria can only be approximately identified, and that between 250-240 bc.

During his stay he made a remarkable discovery: he invented the screw, a pumping machine, whose practical spread was so great that it was used throughout the known world, and is still used today for pumping liquids and other fossil elements . Basically Archimedes's machine was a helical serface around an axis inside a tube. By rotation of the shaft this incredible invention could transfer water from a lower to a higher point. The first recorded use of such an object is in a text by Athenaeus of Naucratis, where he describes of an enormous ship that was designed by Archias of Corinth for the tyrant of Siracuse, Hiero ll.

Since this was one of the biggest ships in its time it would be inevitable that it would take on water. Therefore, Archimedes's screw was used to pump the water back into the sea. It is unclear whether or not Archimedes designed

this pump for the use on the hip but it is widely thought that the great mathematician invented such a tool to help Egyptians maneuver water from lower land to higher for watering the fields. This invention has survived the winds of time and is still used today, most recently applyed at draining parts of land in the Netherlands that were underwater and also for stableizing the tower of Pisa in 2001.

According to information from Arab sources noted by A. Favaro, Archimedes probably made another trip to Egypt, during which he designed and executed several projects on water management of the river Nile, projects which are reported by Arab uthors. Beyond these signs though, essentially we know that Archimedes travelled to Alexandria only once and no other time, since, according to all sources the greatest part of his life he spent in his hometown of Syracuse, where he came up with all his theoretical or mechanical discoveries.

On the return to his homeland Archimedes made another very important discovery. Hiero wanted a golden crown to be made for him so he asked a goldsmith and gave him 772 grams of gold with a mandate to fulfill his wish. And so, the wasnt produced from Just gold but had another material inside. This is when Hiero, called Archimedes and asked him to examine the crown without deforming it and find out whether or not gold was the only element that assembled the crown. Archimedes tried for a long time, to solve the problem.

Then finaly one day when he was bathing, probably in a barel, he realised the displacement of water when he entered the bath. , That is when he

realised this was directly proportional to the problem of the authenticity of the gold crown, Vitruvius states that Archimedes Jumped out of his bath and ran out shouting : " Eureka , eureka , " Basically, what is now known today as Archimedes's Principle, states that the olume of displaced fluid is equal to the volume of the submerged object. ln more general terms an two objects with the same volume and same mass have different density between each other.

Archimedes carried out his experiment by getting a scale and putting the crown on one end and the equivelent of gold on the other. Then when submerged in water if the crown is made of Just gold the scale would balance if not it would tip more towards either side. One of Archimedes's more controversal discoveries is the harnis of sunlight into a heat ray using a solar mirror. Legend has it that that when Siracuse was under siege y the Romans the structure was used to burn the Romans ships.

The solar mirror , was in fact not one mirror but many mirrors together, in which solar energy was accumulated and then converted into very high heat and when directed to a target, it would cause it to catch fire . Although there were historical references to the mechanism , made by Plutarch , Lucian , Galen , Efstathios and evidence for the use of this weapon in one of the sieges of Constantinople, the existence of this mechanism was questioned by many, with Ren© Descartes being one of them and because of that, was regarded a myth .

The fact that Archimedes had indeed discovered the properties of mirrors is demonstrated by a book by German professor Hop " History of Physics which

states that in 1492 in Venice , the Greek professor George Vallas had in his library a book by Archimedes called 'Mirror' , but later lost. So, if Archimedes didn't know enough information about mirrors and was not sure about putting them into practice , why would he write a whole book about it? Later researchers tried to make the experiment, using materials known in the time of Archimedes , but failed or succeeded partially.