Herodotus called by many “The Father of History” traveled to Egypt around 450 BC to study Egypt. Herodotus indicated that each of the four “perfectly triangle faces of the pyramid were covered with polished limestone (Tompkins, p.2). Herodotus also hypothesized that it took 100,000 slaves twenty years to construct the pyramid.

Strabo, a Pontine geographer, voyaged up the Nile River in 24 BC wrote forty-seven books about the History of Egypt. Unfortunately, most of his work was lost. The only remaining information we have is a description and measurements of an entry way on the north side of The Great Pyramid made of hinged stone which could be raised and lowered and looked identical to the surrounding masonry (Tompkins p.3)

It would not be until 1638 that John Greaves, a mathematician and astronomer traveled to Egypt. His main goal was to find clues in the Great Pyramid about the circumference of the earth and identify the ancient unit of measurement used by The Great Pyramid’s builders. Greaves surveyed The Great Pyramid with greater accuracy than anyone since the builders. Greaves measured the height of the Pyramid to be 499 feet high, within 12 feet of being correct. He also measured the base of the Pyramid to be 693 feet; however, due to the large piles of rubble at the base of the Pyramid he underestimated the length of the base by approximately 70 feet. Greaves returned to England and published his work in 1646 as “Pyramidographia: Or a Description of the Pyramids of Aegypt”. Sir Issac Newton unaware that Greaves survey was flawed used Greaves results to come to the conclusion that the Great Pyramid had been built with two distinct measurements the “profane” cubit, about 21 inches long, and the “sacred” cubit, about 25 inches long (Jackson, Stamp, p125-126).

No remarkable discovery or interest in the Pyramids was rekindled until Napolean Bonaparte set sail to conquer Eqypt as a means to gain India and work domination. Napolean took along with him 175 “savants, erudite French civilians, who supposed to have a knowledge of Egyptian antiquities and 35,000 soldiers. Napolean and his army defeated 10,000 Mameluke horseman at the Great Pyramid. The “savants” explored and measured the Pyramid at this time. The “savants” explored the interior of the Pyramid but found nothing of real interest; however outside the Pyramids they found a long flat area on which the Pyramid had originally been established. They also found two trenches carved 10 by 12 feet approximately 20 inches into the bedrock at two corners of the Pyramid. This gave them two concrete points to measure the base of the Pyramid. Edme-Francois Jomard, one of the savants, was able to take a series of measurements giving a base length of 230.902 meters or 757.5 feet. Jomard also measured the height of the Pyramid by measuring down each step to equal 144 meters or 481 feet. Using trigonometry, he obtained an angle of slope of 51°19’14” and an apothem of 184.722 meters. Jomrad remembered according to Strabo, the apothem of the Pyramid was supposed to be one stadium long (Tompkins, p. 45). He knew that a stadium was 600 Greek feet which is 185.5 meters. Jomrad also learned from reading classics of his time that a stadium of 600 feet was held to be 1/600th of a geographical degree. He then calculated that a geographical degree at the mean latitude of Egypt was 110,827.78 meters. Dividing this figure by 600 resulted in a measure of 184.712 meters (Tompkins, p46). It seemed to Jomrad that the Egyptians had worked out basic units of measure like the cubit and stadium from the size of the earth and displayed this knowledge in the Pyramid structure. Jomrad discovered that some Greek authors indicated that the perimeter at the base of the Pyramid was supposed to measure one half a minute of longitude. This means 480 times the base of the Pyramids is equal to one geographical degree. Jomrad calculated that base 230.8 meters by dividing the 110,827-meter degree by 480. So Jomrad wanted to compare the cubit to these measures. Jomrad read that according to Herodotus 400 cubits was equal to 600 feet. Jomrad divided the apothem by 400 and came up with 0.4618 meter. This actually turned out to be the present Egyptian cubit. Jomrad had skeptics but he continued to assert what he thought to be true. He even pointed out that Herodotus, Plato, and Diodorus and others had called Egypt the “birthplace” of geometry (Tompkins p.48).

Jomrad’s colleagues Gratien Le Pere and Colone Coutelle re-measured the base Pyramid and found it to be 2 meters longer than Jomrad. They also re-measured the height and found that Jomrad’s angle of inclination was too small and thus his apothem too short.

In the early 1800’s, Colonel Howard-Vyse , a British Guards officer, began exploring the Pyramid. Since, the Middle Ages when the Arabs had taken the limestone from the outercasing to use for other buildings, the perimeter of the Pyramid had been littered with debris and rubble. The sand had also covered the corners that the French had recently cleared. Howard-Vyse decided to clear a space on the north side of the

Pyramid. What he discovered were two limestone blocks on the lowest level of the Pyramid in their original form and at their original location. The limestone was so precisely carved that it allowed Howard-Vyse and his help to measure the angle of the slope the block that would be the angle at which the Pyramid was originally built. The blocks were 5 feet high, 12 feet long, and 8 feet wide and displayed an angle of approximately 51°51'. This angle is slightly steeper than the angle measured by the French. Now that Howard-Vyse had the angle of inclination and the length of the base as 763.62 feet measured by Frenchmen Coutelle and Le Pere, it was possible for him to calculate by using trigonmetry the perpendicular height to the point where the missing capstone should have been. He arrived at the solution of 485.5 feet or 147.9 meters. In 1840 Howard-Vyse returned to England and produced "Operations Carried on at the Pyramids of Gizeh in 1837".

In the mid-1800's, John Taylor, an English poet, essayist, and gifted mathematician as well as an amateur astronomer, began comparing and compiling accounts of the many who had visited and studied the Pyramid. Taylor made a scaled model of the Pyramid and analyzed the measurements from a mathematical point of view. Taylor began drawing and redrawing the Pyramid according to the measurements of Howard-Vyse. It seemed odd to Taylor that the Egyptians chose to build the Pyramid with an angle of inclination of 51°51' instead of choosing an angle such as 60°. Taylor noticed that Herodotus' reported that the Egyptian priests gave him information about the surface of each face from which Taylor concluded that the faces of the Pyramid had been built equal in area to the square of the Pyramid's height. Taylor also discovered that if the perimeter of the Pyramid was multiplied by 2 times the height, he arrived with the number 3.144. This number being very close to π which is 3.14159. This meant that the height of the Pyramid seemed to be in relationship to the perimeter of its base as the radius of a circle is to its circumference (Tompkin, p.70). Taylor was curious to understand why π was represented in the Pyramid. He theorized that the perimeter of the Pyramid might have been constructed to represent the circumference of the Earth at the equator and the height might be representative of the distance from the Earth's center to a pole. This theory supported Jomrad's research. Taylor also was confident that the Egyptians had not used a unit of measure such as the British foot because this unit of measure did not fit the height or the base exactly. So Taylor explored for a unit of measure a proportion that contained π and fit the geometry of the Pyramid in whole numbers. Taylor came up with 366:116.5. Taylor noticed that 366 was obviously close to the number of days in a year and thought maybe the Egyptians designed the perimeter of the Pyramid to represent the solar year (Tompkins p.72). Taylor then converted the perimeter of the Pyramid to inches and noticed that it was nearly 100 times 366. He also noticed that if he divided the base of the Pyramid by 25 inches he got 366. This led Taylor to believe that the Egyptians used a unit very close to the British foot but not exactly (25 of these units appeared to be = a cubit). At the same time Sir John Herschel, a Britian astronomer discovered that a unit half a hair's length longer than the British inch was a unit based on the actual size of the earth. It turned out that 25 of these units were the actual cubit that Taylor had discoverer in his calculations. Taylor could not understand how such an ancient civilization could a vast knowledge of the planet's shape, size, and motion. Taylor concluded that the Egyptians must have built the Pyramid by Divine Revelation much the same way Noah built the Ark. Taylor endured must criticism for his belief.

Piazzi Smyth, a mathematician near the same time as Taylor, did not mock Taylor's beliefs or reasoning. Piazzi Smyth actually supported Taylor's ideas. In 1864, Taylor died and Smyth decided to travel to Egypt to measure the Pyramid in hopes to see whether Taylor's theories of the π relations and the cubit used to supposedly build the Pyramid were true. In 1864, Smyth and his wife set sail for Egypt with more accurate scientific instruments than had ever been used to measure the Pyramid. Smyth used a 500-inch cord, along with theodolites, sextants, and telescopes to measure elevations and take measurements of the outside of the Pyramid. From the Summit of the Pyramid Smyth calculated the latitude of the Pyramid to be 29°58'51" very close to 30° (Tompkins p.86). Smyth later explained the difference in the latitude by the gradual shifting of latitude registered at Greenwich as 1.38" per century. Smyth then subtracted 26°17' (angle of the descending passage inside the Pyramid) from the Pyramid's latitude of 30°. He came up with an angle of 3°43'. Smyth then calculated that the alpha Draconis would have been located 3°43' from the pole at its lower culmination in 2123 BC and again in 3440 BC. Supporting the later date, Smyth concluded that Pyramid had taken place at midnight of the equinox of 2170 BC when alpha Draconis was at the meridian below the pole, another star Alcyone of the Pleiades would have been crossing the meridian above the pole (Tompkins p.87). In other words, the Egyptians could have aligned the Pyramid with these constellations at that specific time.