

Chapter 1 : Pyramids of Giza

The Great Pyramid of Giza (also known as the Pyramid of Khufu or the Pyramid of Cheops) is the oldest and largest of the three pyramids in the Giza pyramid complex bordering what is now El Giza, Egypt.

The Great Pyramid of Giza at night. The Aurora Borealis is the phenomena caused by the same process in which where electrons created by the sun collide with air molecules to create light. So, what would it take for the Great Pyramid of Giza to create similar light? If in the ancient past someone decided to build a system to emit electrons and create light, the person would definitely face a dilemma with the choice of construction materials. To accomplish that goal, high conductivity material at high frequency is needed. Copper has excellent conductivity and we know Ancient Egyptians had it in their toolbox, though at high frequency copper would overheat and melt within a few seconds. What other materials could be used? Great Pyramid of Giza in the rays of the sun. It was found its conductance improves at higher frequency - to the point where it is exceptional. If the conductivity of a material needs to be about Tera Hz, in addition to structurally strong, there could not be better material than limestone. One of the original casing stones for the Great Pyramid circa BC , most of which were removed during medieval times. This block was found in the rubble surrounding the pyramid. The fact that the geographical center of Earth is at the location of the Great Pyramid is startling. Now, for a structure to emit high frequency radiation which is really light , it must be surrounded by a large land mass. This is the fundamental requirement for systems emitting electromagnetic radiation, of which any antenna design engineer is aware. If the pyramid needs to emit electromagnetic radiation on a scale of the whole planet, the maximum land mass location is ideal! The Large and Small Magellanic Clouds, two companion galaxies to our own Milky Way galaxy, can be seen as bright smudges in the night sky, in the centre of the photograph. The earth is a spherical capacitor, which means electrons at high frequency would propagate through the air with little impedance. Also, the ionosphere has negligible impedance, which means electrons can travel along the layer of the ionosphere to the other side of the planet with practically no restriction. However, they need to come back to the base of the pyramid to complete the closed path. Passing through the ionosphere, the electrons would be colliding with atoms of various gasses, creating air glow similar to Aurora Borealis. The electrons travel back toward Earth from the ionosphere through elevation points of the planet. It is interesting to note that many ancient cultures across the planet have had pyramid like structures. Reaching the surface, the electrons would return to the pyramid base through the mantle of the planet, the impedance of which is also negligible. Remains of the Great Pyramid of Caral. The finding of the caves was reported by Andrew Collins and Dr. Another process took place there known as electrolysis, causing water molecules to split into hydrogen and oxygen gas. The gas mixture filling the caves caused air pressure build up on the bed rock, creating earth trembling and noise. It is interesting to note that the Pyramid Text has multiple references to quakes and trembles. Each of the elements played an important role in producing light. I provide a description of the functions of the main components in the system below. Great Pyramid of Giza plan. Author provided Subterranean Chamber The function of the subterranean chamber was to split water molecules into oxygen and hydrogen gas. For that you need to have water, terminals, and voltage. Hydrogen would accumulate around one voltage terminal cathode and oxygen would be around the other terminal anode , but only hydrogen is needed for light, so oxygen needs to be rejected from the system. The front view of the subterranean chamber shows two hills made of limestone - those are two necessary terminals. Front view of the subterranean chamber. Author provided The top view of the chamber shows some similarities between the terminals: All this points to intelligent design of the subterranean chamber. You can also notice some differences which are intentional. Top view of the subterranean chamber. Author provided Note that the terminal on the left has a wider area compared to the terminal on the right. This means more electrons would pass through the terminal on the left side than right terminal. This would cause a voltage potential in which negative is on the right side, with the hydrogen gas accumulating there, and oxygen is on the left. Also, you can notice that the left and right shafts exiting the subterranean chamber are not leveled. Hydrogen gas being lighter than the air, it would exit to the right and pass toward the ascending passage.

Oxygen gas is heavier than air and would tend to concentrate at the bottom of the chamber. The granite block on the floor at the right shaft would prevent oxygen passing through. Some mixture would pass along, but it would not cause combustion. The gas built in the caves came out from the floor pit. This was not a steady process of gas and water slowly pouring out; it was a process of gas and water blasting out of the pit with high pressure. The Grand Gallery of the Great Pyramid. To get electrons from hydrogen it can be pressurized, subjected to high voltage, or hit with EM radiation. All three processes were used in the pyramid. The shafts are blocked by Gantenbrinks doors, so it stayed there. With pressure mounting, the temperature of the gas increased, and partial release of electrons took place. There are copper terminals in the doors to channel the EM radiation of stars into the system. Those align with the shafts. The alignment does not need to be perfect, just enough for X and gamma rays which can pass through the blockage to reach the copper. Then the ionization of hydrogen took place. What it was used for and why was it placed there are questions that still puzzle many scholars. Without a high voltage source in the chamber, the pyramid would not work. A device similar to the Baghdad battery could have been used. Or a device similar in construction to the Ark of the Covenant would also work.

Chapter 2 : The Great Pyramid of Giza | 15 Facts And Fascinating History - RankRed

His pyramid, on a nearby site at Giza, appears taller than his father's, but this is an illusion; it is built on higher ground and was in fact, originally at feet (m), feet (m) shorter than the Great Pyramid.

History and description Timeline and map of the Great Pyramid of Giza and the other Wonders of the Ancient World Egyptologists believe the pyramid was built as a tomb for the Fourth Dynasty Egyptian pharaoh Khufu often Hellenized as "Cheops" and was constructed over a year period. The mass of the pyramid is estimated at 5. Additionally, since it consists of an estimated 2. The first precision measurements of the pyramid were made by Egyptologist Sir Flinders Petrie in 1882 and published as *The Pyramids and Temples of Gizeh*. Many of the casing-stones and inner chamber blocks of the Great Pyramid fit together with extremely high precision. Based on measurements taken on the north-eastern casing stones, the mean opening of the joints is only 0. Some Egyptologists consider this to have been the result of deliberate design proportion. They believe that the observed pyramid slope may be based on a simple seked slope choice alone, with no regard to the overall size and proportions of the finished building. The Tura limestone used for the casing was quarried across the river. Traditionally, [clarification needed] ancient Egyptians cut stone blocks by hammering into them wooden wedges, which were then soaked with water. As the water was absorbed, the wedges expanded, causing the rock to crack. Once they were cut, they were carried by boat either up or down the Nile River to the pyramid. Visibly, all that remains is the underlying stepped core structure seen today. Many more casing stones were removed from the great pyramids by Muhammad Ali Pasha in the early 19th century to build the upper portion of his Alabaster Mosque in Cairo, not far from Giza. These limestone casings can still be seen as parts of these structures. Later explorers reported massive piles of rubble at the base of the pyramids left over from the continuing collapse of the casing stones, which were subsequently cleared away during continuing excavations of the site. Nevertheless, a few of the casing stones from the lowest course can be seen to this day in situ around the base of the Great Pyramid, and display the same workmanship and precision that has been reported for centuries. He suggested a redetermination of north was made after the construction of the core, but a mistake was made, and the casing was built with a different orientation. Egyptian pyramid construction techniques Clay seal bearing the name of Khufu from the Great Pyramid. Verner posited that the labour was organized into a hierarchy , consisting of two gangs of , men, divided into five zaa or phyle of 20, men each, which may have been further divided according to the skills of the workers. John Romer suggests that they used the same method that had been used for earlier and later constructions, laying out parts of the plan on the ground at a 1-to-1 scale. He writes that "such a working diagram would also serve to generate the architecture of the pyramid with precision unmatched by any other means". Without the use of pulleys, wheels, or iron tools, they used critical path analysis methods, which suggest that the Great Pyramid was completed from start to finish in approximately 10 years. From this original entrance, there is a Descending Passage 0. There is a continuation of the horizontal passage in the south wall of the lower chamber; there is also a pit dug in the floor of the chamber. Some Egyptologists suggest that this Lower Chamber was intended to be the original burial chamber, but Pharaoh Khufu later changed his mind and wanted it to be higher up in the pyramid. Originally concealed with a slab of stone, this is the beginning of the Ascending Passage. The Ascending Passage is The lower end of the Ascending Passage is closed by three huge blocks of granite, each about 1. At the start of the Grand Gallery on the right-hand side there is a hole cut in the wall. This is the start of a vertical shaft which follows an irregular path through the masonry of the pyramid to join the Descending Passage. The passage is 1. At the eastern end of the chamber there is a niche 4. The original depth of the niche was 1. At the end of one of his shafts, Dixon discovered a ball of black diorite a type of rock and a bronze implement of unknown purpose. Both objects are currently in the British Museum. Some years later the National Geographic Society created a similar robot which, in September , drilled a small hole in the southern door, only to find another door behind it. With this they were able to penetrate the first door of the southern shaft through the hole drilled in , and view all the sides of the small chamber behind it. They discovered hieroglyphs written in red paint. They were also able to scrutinize the inside of the two copper "handles" embedded in the

door, and they now believe them to be for decorative purposes. They also found the reverse side of the "door" to be finished and polished, which suggests that it was not put there just to block the shaft from debris, but rather for a more specific reason. At the base it is 2. There are seven of these steps, so, at the top, the Grand Gallery is only 1. It is roofed by slabs of stone laid at a slightly steeper angle than the floor of the gallery, so that each stone fits into a slot cut in the top of the gallery like the teeth of a ratchet. The purpose was to have each block supported by the wall of the Gallery, rather than resting on the block beneath it, in order to prevent cumulative pressure. Perring, who dug tunnels upwards using blasting powder. In the shelves there are 54 slots, 27 on each side matched by vertical and horizontal slots in the walls of the Gallery. These form a cross shape that rises out of the slot in the shelf. The purpose of these slots is not known, but the central gutter in the floor of the Gallery, which is the same width as the Ascending Passage, has led to speculation that the blocking stones were stored in the Grand Gallery and the slots held wooden beams to restrain them from sliding down the passage. Fragments of granite found by Petrie in the Descending Passage may have come from these now-vanished doors. Its existence was confirmed by independent detection with three different technologies: It has a flat roof 11 cubits and 5 digits or 5. The purpose of these shafts is not clear: Above the roof, which is formed of nine slabs of stone weighing in total about tons, are five compartments known as Relieving Chambers. Vyse suspected the presence of upper chambers when he found that he could push a long reed through a crack in the ceiling of the first chamber. The sarcophagus is slightly larger than the Ascending Passage, which indicates that it must have been placed in the Chamber before the roof was put in place. Unlike the fine masonry of the walls of the Chamber, the sarcophagus is roughly finished, with saw-marks visible in several places. This is in contrast with the finely finished and decorated sarcophagi found in other pyramids of the same period. Petrie suggested that such a sarcophagus was intended but was lost in the river on the way north from Aswan and a hurriedly made replacement was used instead. It is believed that their efforts dislodged the stone fitted in the ceiling of the Descending Passage to hide the entrance to the Ascending Passage and it was the noise of that stone falling and then sliding down the Descending Passage, which alerted them to the need to turn left. Unable to remove these stones, however, the workmen tunnelled up beside them through the softer limestone of the Pyramid until they reached the Ascending Passage. It is possible to enter the Descending Passage from this point, but access is usually forbidden. The Great Pyramid is surrounded by a complex of several buildings including small pyramids. The Pyramid Temple, which stood on the east side of the pyramid and measured There are only a few remnants of the causeway which linked the pyramid with the valley and the Valley Temple. The Valley Temple is buried beneath the village of Nazlet el-Samman; basalt paving and limestone walls have been found but the site has not been excavated. He theorizes that such a saw could have been attached to a wooden trestle and possibly used in conjunction with vegetable oil, cutting sand, emery or pounded quartz to cut the blocks, which would have required the labour of at least a dozen men to operate it. Three remain standing to nearly full height but the fourth was so ruined that its existence was not suspected until the recent discovery of the first course of stones and the remains of the capstone. Hidden beneath the paving around the pyramid was the tomb of Queen Hetepheres I, sister-wife of Sneferu and mother of Khufu. Discovered by accident by the Reisner expedition, the burial was intact, though the carefully sealed coffin proved to be empty. Group photo of Australian 11th Battalion soldiers on the Great Pyramid in In light of this new discovery, as to where then the pyramid workers may have lived, Lehner suggested the alternative possibility they may have camped on the ramps he believes were used to construct the pyramids or possibly at nearby quarries. Khufu ship There are three boat-shaped pits around the pyramid, of a size and shape to have held complete boats, though so shallow that any superstructure, if there ever was one, must have been removed or disassembled. In May, the Egyptian archaeologist Kamal el-Mallakh discovered a fourth pit, a long, narrow rectangle, still covered with slabs of stone weighing up to 15 tons. These were entrusted to a boat builder, Haj Ahmed Yusuf, who worked out how the pieces fit together. The entire process, including conservation and straightening of the warped wood, took fourteen years. The result is a cedar-wood boat. During construction of this museum, which stands above the boat pit, a second sealed boat pit was discovered. It was deliberately left unopened until when excavation began on the boat. Dotted lines indicate original heights, where data are available. Although succeeding pyramids were smaller, pyramid-building continued

until the end of the Middle Kingdom. However, as authors Brier and Hobbs claim, "all the pyramids were robbed" by the New Kingdom , when the construction of royal tombs in a desert valley, now known as the Valley of the Kings , began. Herodotus visited Egypt in the 5th century BC and recounts a story that he was told concerning vaults under the pyramid built on an island where the body of Cheops lies. Edwards notes that the pyramid had "almost certainly been opened and its contents plundered long before the time of Herodotus" and that it might have been closed again during the Twenty-sixth Dynasty of Egypt when other monuments were restored. He suggests that the story told to Herodotus could have been the result of almost two centuries of telling and retelling by Pyramid guides.

Chapter 3 : Great Pyramid of Giza - Wikipedia

The Great Pyramid of Giza is a defining symbol of Egypt and the last of the ancient Seven Wonders of the World. It is located on the Giza plateau near the modern city of Cairo and was built over a twenty-year period during the reign of the king Khufu (BCE, also known as Cheops) of the 4th.

It was built with such precision that our current technology cannot replicate it. Historical analysis shows that the Pyramids were built between 2500 and 2600 BC. Here are the facts: The pyramid is estimated to have around 2,300,000 stone blocks that weigh from 2 to 30 tons each and there are even some blocks that weigh over 50 tons. The base of the pyramid covers 530,000 m² , ft² with each side greater than 230, m , ft in area. The interior temperature is constant and equals the average temperature of the earth, 20 Degrees Celsius 68 Degrees Fahrenheit. The cornerstone foundations of the pyramid have ball and socket construction capable of dealing with heat expansion and earthquakes. The mortar used is of an unknown origin Yes, no explanation was given. It is stronger than the stone and still holding up today. It was originally covered with casing stones made of highly polished limestone. They are no longer present being used by Arabs to build mosques after an earthquake in the 14th century loosened many of them. It has been calculated that the original pyramid with its casing stones would act like gigantic mirrors and reflect light so powerful that it would be visible from the moon as a shining star on earth. How these blocks were transported and assembled into the pyramid is still a mystery. The position of the North Pole moves over time and the pyramid was exactly aligned at one time. The four faces of the pyramid are slightly concave, the only pyramid to have been built this way. This phenomenon is only detectable from the air at dawn and sunset on the spring and autumn equinoxes when the sun casts shadows on the pyramid. The coffer was made out of a block of solid granite. This would have required bronze saws ft. Hollowing out of the interior would require tubular drills of the same material applied with a tremendous vertical force. Microscopic analysis of the coffer reveals that it was made with a fixed point drill that used hard jewel bits and a drilling force of 2 tons. The Great Pyramid had a swivel door entrance at one time. Swivel doors were found in only two other pyramids: It is reported that when the pyramid was first broken into that the swivel door, weighing some 20 tons, was so well balanced that it could be opened by pushing out from the inside with only minimal force, but when closed, was so perfect a fit that it could scarcely be detected and there was not enough crack or crevice around the edges to gain a grasp from the outside. With the mantle in place, the Great Pyramid could be seen from the mountains of Israel and probably the moon as well. The weight of the pyramid is estimated at 5,900,000 tons. This was the North Star at that point in time. No other star has aligned with the passage since then. No other star aligned with this shaft during that time in history. Archeologists say it was the tallest structure in the world for about 3,800 years. The relationship between Pi p and Phi F is expressed in the fundamental proportions of the Great Pyramid. A Miracle in Stone, , Joseph A. Our Inheritance in the Great Pyramid, , C. Unless otherwise stated by Ancient Code, no Content published on www.

Great Pyramid of Khufu: cross section of interior Cross section of the interior of the Great Pyramid of Khufu, facing west, near Giza, Egypt. *Encyclopædia Britannica, Inc.* The question of how the pyramids were built has not received a wholly satisfactory answer.

The Sphinx dates from the reign of king Khafre. Khentkaus I Khentkaus I was buried in Giza. The pyramid complex of Queen Khentkaus includes: Egyptian pyramid construction techniques Most construction theories are based on the idea that the pyramids were built by moving huge stones from a quarry and dragging and lifting them into place. The disagreements center on the method by which the stones were conveyed and placed and how possible the method was. In building the pyramids, the architects might have developed their techniques over time. They would select a site on a relatively flat area of bedrock "not sand" which provided a stable foundation. After carefully surveying the site and laying down the first level of stones, they constructed the pyramids in horizontal levels, one on top of the other. For the Great Pyramid of Giza , most of the stone for the interior seems to have been quarried immediately to the south of the construction site. The smooth exterior of the pyramid was made of a fine grade of white limestone that was quarried across the Nile. These exterior blocks had to be carefully cut, transported by river barge to Giza, and dragged up ramps to the construction site. Only a few exterior blocks remain in place at the bottom of the Great Pyramid. During the Middle Ages 5th century to 15th century , people may have taken the rest away for building projects in the city of Cairo. Workers might have marked all the blocks to indicate the angle of the pyramid wall and trimmed the surfaces carefully so that the blocks fit together. During construction, the outer surface of the stone was smooth limestone; excess stone has eroded as time has passed. Proper care of the remains was necessary in order for the "former Pharaoh to perform his new duties as king of the dead. The embalmed body of the King was entombed underneath or within the pyramid to protect it and allow his transformation and ascension to the afterlife. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed. September Learn how and when to remove this template message The Giza pyramid complex at night The sides of all three of the Giza pyramids were astronomically oriented to the north-south and east-west within a small fraction of a degree. Among recent attempts [9] [10] [11] to explain such a clearly deliberate pattern are those of S. The arrangement of the pyramids is a representation of the Orion constellation according to the disputed Orion correlation theory. Bakers, carpenters, water carriers, and others were also needed for the project. Along with the methods utilized to construct the pyramids, there is also wide speculation regarding the exact number of workers needed for a building project of this magnitude. The village is located to the southeast of the Khafre and Menkaure complexes. All of the construction probably happened in the 35 to 50 years that spanned the reigns of Khafre and Menkaure, builders of the Second and Third Giza Pyramids". These cemeteries around the pyramids were arranged along streets and avenues. On the other side of the pyramid in the West Field, the royals sons Wepemnofret and Hemiunu were buried in Cemetery G and Cemetery G respectively. These cemeteries were further expanded during the 5th and 6th dynasty. It is divided into smaller areas such as the cemeteries referred to as the Abu Bakr Excavations "50, "1, and , and several cemeteries named based on the mastaba numbers such as Cemetery G , Cemetery G , etc. Further cemeteries in this field are: Three other cemeteries are named after their excavators:

Chapter 5 : The Great Pyramid of Giza | The Truth Behind

Pyramids of Giza, soaring above the city of Cairo, Egypt ()The Great Pyramid of Giza is the most substantial ancient structure in the world - and the most mysterious.

Surely it is one of the most mysterious and miraculous things in the world that still astound historians and a layman, like us, the same. But what makes it so mysterious? What is about the Pyramid that the experts fail to understand till date? Well, for starters the ancient structure was built without the wheels, pulleys or other tools. It is generally accepted that the construction of the pyramid started sometime around BC during the rule of the Fourth Dynasty under the Old Kingdom. Other things include small villages and cemeteries. So, here we have compiled 15 of the most interesting facts about the Great Pyramid of Giza. Nina Aldin Thune The ancient Egyptians used pyramids as the final resting place of the Pharaohs and their queen. When Was the great Pyramid of Giza Built? The Great Pyramid of Giza in the 19th century The Pyramid of Giza is the oldest and the only surviving wonder of the ancient world. It exhibits the height of human engineering and sheer will, a true masterpiece in every sense. However, its establishment is still much of a debate. Since no significant written accounts have been recovered regarding the construction of Pyramid of Giza, it is almost impossible to estimate the amount of time it took to construct the ancient structure. A leading and generally accepted theory suggests that the entire structure was completed in just 20 years. Completing a structure of this magnitude in 20 years would require installing about 5 stones in every half hour every day around the clock. It is estimated that more than 5. How Much Does it Weigh Then? We know that the entire pyramid was built with 2. In comparison, the Burj Khalifa has an empty weight of , tons. The crown of the oldest pyramid in Egypt goes to the Pyramid of Djoser, also known as the step pyramid. The Pyramid held the record for the tallest structure in the world in BC and was outranked 40 years later by the Meidum Pyramid in Egypt. After entering the pyramid, a small passage descends about meters into the bottom of the pyramid and then lead to an unfinished chamber. At about 30 meters down the descending slope, there is the pathway to the ascending passage that leads to the Grand Gallery. On the north and south walls, there are two narrow shafts. Their purpose is however not clear. It remained so for more than 3, years until the Lincoln Cathedral was erected in in the United Kingdom. You can find a detailed report on this project here. The Great Pyramid was Constructed By Skilled Labors The early Greek observers believed that thousands of unskilled slaves were used to construct the pyramid and it remained a widely accepted theory until recently. Many recent discoveries near the historic site now indicates that the structure was built by thousands of skilled labors instead of slaves. In , archaeologist and Egyptologist Zahi Hawass along with his fellow colleague Mark Lehner discovered few cemeteries of workers who presumably worked around the clock on the pyramid. Researchers theorize that a few groups of skilled labors took permanent shelter near the premises, and it was only during the late summers that a large workforce were summoned to work on the pyramid. Olaf Tausch Though its establishment about 4, years ago astound historians and architects till this date, there are several theories that try to provide a possible explanation about its creation. One such theory is that most part of the pyramid was constructed from inside out. However, in the second and last phase, Egyptians worked their way up from inside using a spiraling internal ramp, fitting blocks of stones into places. According to Houdin, his theory would be the most economical way to reconstruct the pyramid if we ever decide to do so. Estimating how much it would cost to construct a life-size replica of the Great Pyramid today is not that easy, however we might have something here. This alignment is a now a crucial aspect of a popular hypothesis known as the Orion correlation theory. The theory argues that there is a connection between the stars in the Constellation Orion and the three largest pyramids of Giza complex and that the Ancient Egyptian engineers were aware of this. Do you know that originally the Pyramid was covered with smoother limestone casing surface, which are now removed and what we see today is only the core structure.

Chapter 6 : Study reveals the Great Pyramid of Giza can focus electromagnetic energy

No pyramids are more celebrated than the Great Pyramids of Giza, located on a plateau on the west bank of the Nile River, on the outskirts of modern-day Cairo. The oldest and largest of the three.

Study reveals the Great Pyramid of Giza can focus electromagnetic energy July 31, by Anastasia Komarova, ITMO University Propagation of electromagnetic waves inside the pyramids of Cheops at different lengths of radio waves from to meters. ITMO University, Laser Zentrum Hannover An international research group has applied methods of theoretical physics to investigate the electromagnetic response of the Great Pyramid to radio waves. Scientists predicted that under resonance conditions, the pyramid can concentrate electromagnetic energy in its internal chambers and under the base. The research group plans to use these theoretical results to design nanoparticles capable of reproducing similar effects in the optical range. Such nanoparticles may be used, for example, to develop sensors and highly efficient solar cells. The study was published in the Journal of Applied Physics. While Egyptian pyramids are surrounded by many myths and legends, researchers have little scientifically reliable information about their physical properties. Physicists recently took an interest in how the Great Pyramid would interact with electromagnetic waves of a resonant length. Calculations showed that in the resonant state, the pyramid can concentrate electromagnetic energy in the its internal chambers as well as under its base, where the third unfinished chamber is located. These conclusions were derived on the basis of numerical modeling and analytical methods of physics. The researchers first estimated that resonances in the pyramid can be induced by radio waves with a length ranging from to meters. Then they made a model of the electromagnetic response of the pyramid and calculated the extinction cross section. This value helps to estimate which part of the incident wave energy can be scattered or absorbed by the pyramid under resonant conditions. Finally, for the same conditions, the scientists obtained the electromagnetic field distribution inside the pyramid. In order to explain the results, the scientists conducted a multipole analysis. This method is widely used in physics to study the interaction between a complex object and electromagnetic field. The object scattering the field is replaced by a set of simpler sources of radiation: The collection of multipole radiation coincides with the field scattering by an entire object. Therefore, knowing the type of each multipole, it is possible to predict and explain the distribution and configuration of the scattered fields in the whole system. The Great Pyramid attracted the researchers while they were studying the interaction between light and dielectric nanoparticles. The scattering of light by nanoparticles depends on their size, shape and refractive index of the source material. Varying these parameters, it is possible to determine the resonance scattering regimes and use them to develop devices for controlling light at the nanoscale. We as scientists were interested in them as well, so we decided to look at the Great Pyramid as a particle dissipating radio waves resonantly. Due to the lack of information about the physical properties of the pyramid, we had to use some assumptions. For example, we assumed that there are no unknown cavities inside, and the building material with the properties of an ordinary limestone is evenly distributed in and out of the pyramid. With these assumptions made, we obtained interesting results that can find important practical applications," says Dr. Andrey Evlyukhin, scientific supervisor and coordinator of the research. Now, the scientists plan to use the results to reproduce similar effects at the nanoscale.

Chapter 7 : The Great Pyramids of Giza (article) | Khan Academy

Is The Great Pyramid of Giza's Location Related to the Speed of Light? The latitude of the pyramid in decimal degrees can match a sequence of numbers expressing the speed of light if you look.

He built three pyramids in allâ€”but the first two were glorious failures. His first, the pyramid at Medum, began as a step pyramid and was then modified to form the first true pyramid. But it was unstable and the limestone blocks began to slip. Soon, work on it was abandoned. The Bent Pyramid was originally planned as a true pyramid, but the corners were built on unstable ground and the walls of the burial chambers inside began to crack and shift inward. This was probably done to alleviate the stresses in the lower part of the pyramid and make it stronger. But the bent pyramid was never used. Instead, Sneferu began a third pyramid about a mile away. This one is called the red pyramid because of the red limestone blocks used in its construction. The Pyramids of Giza With the red pyramid, Sneferu set the standard for all true pyramids to come. He included aboveground burial chambers, a mortuary temple, and a causeway leading down to a valley temple. These temples had landing stages which were linked to the Nile by a canal. In ancient times they were included among the Seven Wonders of the World. It was built over a twenty year period. Some believe that it was built by slaves, but this is not true. The pharaoh provided good food and clothing for his workers, and was kindly remembered in folk tales for many centuries. The sides are oriented to the four cardinal points of the compass and the length of each side at the base is feet They currently rise feet [m]. It was constructed using around 2,, limestone blocks, each weighing an average of 2. Some blocks weigh as much as 16 tons. For centuries, the Great Pyramid was encased in smooth limestone, but this was plundered in our era to build Cairo. It represents Ra-Harakhte, the sun god, as he rises in the east at dawn but the face of the Sphinx is a portrait of Khafre himself, and is contemporary with his pyramid. Unfortunately, the great sphinx has deteriorated over the millennia and was extensively renovated in ancient times. There have recently been a number of speculative theories concerning the age of the Great Sphinx, but no material evidence exists to suggest that its history should be revised. With an original height of feet 70 m , it is less than half the height of the pyramid built by his grandfather, Khufu. The lower layers consist of red granite from Aswan and the upper courses were originally made of gleaming white limestone. Pyramid List Although pyramid-building in stone continued until the end of the Old Kingdom, the pyramids of Giza were never surpassed in their size and the technical excellence of their construction. New Kingdom ancient Egyptians marvelled at their predecessors monuments, which were then well over a thousand year old. Pyramids were built during the Middle Kingdom BC but these consisted of a mud brick core with a stone skin and are now mere piles of rubble. There are over recorded pyramids in Egypt most of which belong to minor royalty or have no known owners. They required an enormous investment in resources and stood out in the landscape as easy pray to the robbers. The last royal pyramid was built by the first king of the 18th dynasty Ahmose BC but, after that, the Egyptians ceased building these majestic burial structures for all time.

Chapter 8 : Giza pyramid complex - Wikipedia

His Great Pyramid is the largest in Giza and towers some feet (meters) above the plateau. Its estimated million stone blocks each weigh an average of to 15 tons.

See Article History Alternative Titles: In ancient times they were included among the Seven Wonders of the World. Top Questions Who were the pyramids of Giza built for? The pyramids of Giza were royal tombs built for three different pharaohs. The northernmost and oldest pyramid of the group was built for Khufu Greek: Cheops , the second king of the 4th dynasty. Called the Great Pyramid, it is the largest of the three. The middle pyramid was built for Khafre Greek: Chephren , the fourth of the eight kings of the 4th dynasty. The southernmost and last pyramid to be built was that of Menkaure Greek: Mykerinus , the fifth king of the 4th dynasty. It is feet 66 metres high, significantly smaller than the pyramids of Khufu Learn more about ancient Egypt and its dynastic periods. What do the pyramids of Giza represent? Several theories have been proposed about what the form represents: Find out more about the pyramid and its different forms throughout ancient Egypt and the world. The pyramids of Giza are mostly solid masses of stone with very little to be found inside. Like many ancient Egyptian pyramids, those of Khafre and Menkaure have passageways at their base that lead to small subterranean burial chambers underneath each pyramid. Contrary to what one might expect, there are no hieroglyphic texts , treasures, or mummies in any of pyramids of Giza. Decoration inside pyramids began several centuries after those of Khufu, Khafre, and Menkaure were constructed. Moreover, any treasure would have been plundered in ancient and medieval times – a fate that likely affected the bodies of the kings, which have never been found. How did the Egyptians build the pyramids? The question of how the pyramids were built has not received a wholly satisfactory answer. The most plausible one is that the Egyptians employed a sloping and encircling embankment of brick, earth, and sand, which was increased in height and length as the pyramid rose; stone blocks were hauled up the ramp by means of sledges , rollers, and levers. According to the ancient Greek historian Herodotus , the Great Pyramid took 20 years to construct and demanded the labour of , men. This figure is believable given the assumption that these men, who were agricultural labourers, worked on the pyramids only or primarily while there was little work to be done in the fields – i. By the late 20th century, however, archaeologists had found evidence that a more limited workforce may have occupied the site on a permanent rather than a seasonal basis. It was suggested that as few as 20, workers, with accompanying support personnel bakers, physicians, priests, etc. Read about Herodotus, the Greek author who wrote about the construction of the pyramids of Giza in his History, the first great narrative history produced in the ancient world. Can you go inside or climb the pyramids of Giza? The interiors of all three pyramids of Giza are open to visitors, but each requires the purchase of a separate ticket. Although tourists were once able to freely climb the pyramids, that is now illegal. Offenders face up to three years in prison as penalty. In a teenage tourist was banned from visiting Egypt for life after posting photos and videos on social media of his illicit climb. Continue learning about Egyptian art and architecture. The designations of the pyramids – Khufu, Khafre, and Menkaure – correspond to the kings for whom they were built. Called the Great Pyramid , it is the largest of the three, the length of each side at the base averaging Chephren , the fourth of the eight kings of the 4th dynasty; the structure measures Mykerinus , the fifth king of the 4th dynasty; each side measures All three pyramids were plundered both internally and externally in ancient and medieval times. Thus, the grave goods originally deposited in the burial chambers are missing, and the pyramids no longer reach their original heights because they have been almost entirely stripped of their outer casings of smooth white limestone; the Great Pyramid, for example, is now only That of Khafre retains the outer limestone casing only at its topmost portion. Constructed near each pyramid was a mortuary temple , which was linked via a sloping causeway to a valley temple on the edge of the Nile floodplain. Also nearby were subsidiary pyramids used for the burials of other members of the royal family. The internal walls as well as those few outer-casing stones that still remain in place show finer joints than any other masonry constructed in ancient Egypt. This room is entirely lined and roofed with granite. From the chamber two narrow shafts run obliquely through the masonry to the exterior of the pyramid; it is not known whether they were designed for a

religious purpose or were meant for ventilation. Great Pyramid of Khufu: The most plausible one is that the Egyptians employed a sloping and encircling embankment of brick, earth, and sand, which was increased in height and in length as the pyramid rose; stone blocks were hauled up the ramp by means of sledges, rollers, and levers. By the late 20th century, however, archaeologists found evidence that a more limited workforce may have occupied the site on a permanent rather than a seasonal basis. Carved out of limestone, the Sphinx has the facial features of a man but the body of a recumbent lion; it is approximately 73 metres long and 66 feet 20 metres high. Surrounding the three pyramids are extensive fields of flat-topped funerary structures called mastabas ; arranged in a grid pattern, the mastabas were used for the burials of relatives or officials of the kings. Besides the core mastabas of the 4th dynasty, numerous mastabas from the 5th and 6th dynasties c. Mud sealings seem to date the workshop areas to the late 4th dynasty. The tombs range from simple mud-brick domes to more-elaborate stone monuments. Statuettes were found within some of the structures; hieroglyphic inscriptions on tomb walls occasionally identify the deceased. Pyramids of Giza Pyramids of Giza, Egypt.

Chapter 9 : 25 Facts about the Great Pyramid of Giza

Khufu's pyramid, known as the great pyramid of Giza, is the oldest and largest, rising at feet (meters). Archeologists say it was the tallest structure in the world for about 3, years. The relationship between Pi (p) and Phi (F) is expressed in the fundamental proportions of the Great Pyramid.

Egyptologists and archaeologists have been studying the Pyramids for centuries, yet much of their history is still unknown. What do we know for sure? After death, a pharaoh was mummified and enclosed in a wood coffin and stone sarcophagus. He was buried with important items for the afterlife, ranging from household goods to precious valuables. Pharaohs built pyramids not only to house their bodies, but to leave a legacy of their power. The average block weighed 2. How the stones were lifted into place is still being debated. Until recently it was believed they were constructed with slave labor, but we now know that seasonal laborers worked, lived and were buried on site. One work gang inscribed their nickname on the inside of the Pyramid they built: In the distance you can see the pyramids of Khufu, Khafre and Menkaure rising like man-made mountains. Explore this place Get up close Walk right up to the Pyramid of Khafre and imagine it covered with smooth, white stone. Over the years, the original casing stone has been pillaged, along with many artifacts from inside the tomb itself. Turn around degrees to get a view of the Pyramid of Menkaure. Explore this place Spotting the Sphinx With the body of a lion and the head of a man, the Great Sphinx sits at the eastern end of the complex. Measuring 73 meters long by 20 meters high x 66 ft , it is one of the largest sculptures in the world. Take a closer look: Explore this place Tour the Great Pyramids Take a self-guided tour through the major attractions of the Giza Necropolis, and explore one of the most famous archaeological sites on Earth. A sight to behold The Pyramids of Giza are some of the oldest and most fascinating structures on Earth. Built thousands of years ago, they stand as a testament to the engineering accomplishments of civilizations past. Take a journey through time and discover these ancient wonders. What is a pyramid? A pyramid is a shape with triangular sides that join at an apex on top. There are over pyramids in Egypt, most of which were built as tombs for pharaohs, although none are as recognizable as the Pyramids of Giza. Pyramids can also be found in other parts of the world, including Italy , India and Mexico. They took roughly 85 years to construct and were built by three generations of Pharaohs: Khufu, his son Khafre and grandson Menkaure. Standing meters high ft , it was the tallest man-made structure on Earth for nearly 4, years. The pyramid is aligned with the cardinal directions, and faces almost exactly due north, a confounding architectural feat. Next to the Great Pyramid is the Khufu ship , a fully intact solar boat intended to transport the pharaoh to the afterlife. Remarkably, the symmetrical sides and identical angles of this pyramid were achieved using basic tools like cubit rods and plum bobs. The Sphinx is a mythical creature pharaohs believed could bring them favor with the sun god in the afterlife. For centuries, the Great Sphinx was mostly buried by shifting desert sand, but it has now been fully excavated. Explore this place The Pyramid of Menkaure The third and smallest Pyramid of Giza is the tomb of Menkaure, located at the southern edge of the complex. Menkaure has been a source of both precious artifacts and archaeological disappointments. First, human bones recovered inside were found to have been from another site, then a sarcophagus excavated in the pyramid sunk in a shipwreck. Explore this place Building the Pyramids No one knows for sure how this ancient society built monuments so massive. Building the pyramids involved transporting enormous stone blocks to the Giza Plateau, then using ramps, pulleys and levers to stack them at perfect angles. Tens of thousands of paid laborers not slaves built the Great Pyramids, which are more technically advanced than the earlier step pyramid style. Egyptian burial customs After the death of a pharaoh, it took 70 days to mummify the body, including removing the brains and internal organs. Mummies then were placed in a wood coffin and stone sarcophagus. While this is convenient for tourists, their close proximity to this growing city has created challenges for the Pyramids, including noise, light and air pollution. Learn more about these marvels of human engineering. An ancient legacy preserved The Pyramids of Giza were built to survive eternity. The architecture of these structures is so extraordinary that historians are still unsure exactly how ancient Egyptians built them without the help of modern engineering. After 4, years of exposure to the elements, the Pyramids still stand like man-made mountains,

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reflecting the ingenuity of the people who built them. The legacy of ancient Egypt is preserved through these monuments. Now, with Street View, the Pyramids are preserved in a whole new way. View pyramid panoramas Slip through the sands of time as you wander through the Pyramids of Giza, now in Street View.