

Air and Space this Week

Item of the Week

TWO BIG ANNIVERSARIES – BUT ONLY A LITTLE AVIATION AND SPACE

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Upon very rare occasion, I showcase what I hope are interesting round-number anniversaries that have but a tenuous connection with aviation, astronomy, and Space exploration at best. This is one of those Items. Saturday, November 26, 2022, is the 100th anniversary of the discovery of King Tut's tomb by Howard Carter and the 150th anniversary of the exposure of the fraudulent nature of the "Great Dimond Hoax" by the future founding head of the U.S. Geological Survey, Clarence King. Sorry, I couldn't resist!

KING TUT'S TOMB

KING TUT-ANKH-AMUN

Tutankhamun was a minor pharaoh who was the last of his family to rule in the 18th Dynasty (ca. 1332 – 1323 BCE). He was (likely) the son of Ankenaten and his sister; Ankenaten may have been the son of Amenhotep III. Ankenaten died when Tut was very young; Tut's reign would last only nine years because he died when he was still a teenager. Inbreeding had caused Tut a number of medical problems: he had sclerosis, a cleft palate, and bone necrosis in his feet (a number of canes were found in his tomb). He also had suffered a seriously-broken leg at some point in his life, and likely had malaria. Those are the problems we are relatively sure of – there are many others that have been proposed on a variety of evidence.

His rule was inconsequential. However, that of his father was not. During his time as pharaoh, Ankenaten forced a major change in the prevailing religion of Egypt from Amunism to Atenism. He relocated the country's religious center to Amama, causing serious damage to Egypt's economy and relations with its neighbors (including battles with the Nubians and the Asiatics), and making a number of other powerful figures in Egypt quite angry. Tut initially supported his father's changes (and his original name was Tut-Ankh-Aten), but began the conversion to the former ways later in his term.

Tut changed his name to Tut-Ankh-Amun and ordered statues and other memorials be made to support the priests and cult of Amun and Ptah, and relocated the capital from Amama back to Thebes, where it had been, rebuilding the great temple at Karnak in the process. He restored

the traditional festivals in vogue before his father's reign. But he was widely regarded as his father's son rather than his father's un-doer.

Tut died before he was twenty. His many health issues no doubt played a role, but no specific cause of death was recorded at the time. There was some damage to his mummy between its discovery and 1968 (thieves managed to steal a beaded collar (likely taking part of Tut with it) and a beaded skullcap).

TUT'S TOMB

Tut was buried in the Valley of the Kings. About 60 crypts have been excavated there so far. Many are pharaohs, but there are also "private" tombs that were built for the next tier lower in society and other important "private" personages. Others in the latter group have tombs in the adjacent Valley of the Nobles.

Tut's tomb has two fundamental differences from those of the other pharaohs: his is much smaller and much less ornately-decorated, and his was the only pharaoh tomb that hadn't been totally looted by grave robbers over the last two millennia. Great care had been taken throughout the Valley to keep grave robbers away, but....

Pharaoh tombs usually had many rooms, long and confusing passages, and elaborate blocks and plugs to prevent entry. Robbers could beat all those defenses. Tut's tomb has an entry staircase, cross-wise passage at the bottom, and a burial chamber barely big enough for his sarcophagus to fit. There were a number of poorly-painted symbols on the walls, representing an abbreviated story from the Book of the Dead, but no intricate and detailed inscriptions like the other tombs had.

Why did Tut's tomb so small and simple and why did it survive almost completely unscathed? Tut's tomb wasn't a giant subterranean palace. It was more like a *"condo made of stone-ah!"*

Tut's relative youth at death may be part of the reason. It took time to excavate, decorate, and otherwise prepare a pharaoh-class tomb. Other pharaohs had ample time to supervise the construction of their own final resting place, but Tut may have surprised those responsible for preparing his tomb by dying so young. Protocol demanded an elaborate mummification process be used, and a strict limit of 70 days between death and the tomb being sealed. It's very likely that a rush job was needed, and it likely involved using a tomb already (mostly) prepared for a non-pharaoh VIP. The only things in Tut's tomb that were pharaoh-worthy were his sarcophagus and the inner mummy seal, and a number of the for-the-afterlife artifacts that were easy to transport. All that would explain the less-than-usual level of elaborateness.

The location of the tombs of major pharaohs was well-known and publicized in resources that would have been available to tomb robbers back in the day. Tut, and therefore the location of his tomb, was not well known. The early grave robbers would not have known enough about him to be on the lookout for his tomb.

The location of Tut's tomb also may have played a role in its protection.

The area of the Valley of the Kings and the Valley of the Nobles is a limestone terrain cut by a dendritic network of drainages. Tut's tomb lies at the confluence of several such. The climate of the time was arid, but occasional heavy rains would cause local flooding, capable of triggering landslides. Robbers knew what signs to look for in their search for tombs, but in Tut's case, a massive landslide further covered and concealed the site. Robbers actually lived and worked there, not knowing that a rich tomb was deep beneath them! Hiding a minor excavation that would allow clandestine access to a tomb was one thing, digging through a massive landslide layer with drawing undue attention was quite another.

HOWARD CARTER

Howard Carter was born on May 9, 1874, in Kensington, England. He spent much of his youth living with relatives in the nearby town of Swaffham. He was an indifferent student, but showed a fine aptitude for art. Not far from where he lived was Didlington Hall, the home of the wealthy Amherst family. Didlington contained a lot of Egyptian antiques, which really caught young Howard's eye. Lady Amherst recognized Howard's artistic aptitude and interest, and arranged for the Egypt Exploration Fund to send him to Egypt to assist her friend, Percy Newberry, in the excavation and study of Middle Kingdom tombs.

Young Howard (he was only 17) was in his element. He innovated the techniques being used to record tomb carvings, then went to work under Flinders Petrie at Amarna, Akhenaten's capital. He continued doing good archaeological work in Egypt, and in 1899, was appointed Inspector of Monuments for Upper Egypt for the Egyptian Antiquities Service, based at Luxor. He supervised a number of excavations, including a systematic exploration of the Valley of the Kings, and came up with a number of innovations, such as the grid-block system of excavation still in standard use today.

Tomb robbing was still a big problem, and Carter became embroiled in a controversy with locals over thefts, the upshot of which was a transfer to the Lower Egypt directorate. The EAS demonstrated support for Carter by providing funding for him to conduct his own research.

Carter quit the EAS in 1905 over his role in the "Saqqara Affair," a violent confrontation between Egyptian site guards and a group of tourists from France. Carter backed up his guards, and refused to apologize to French officials who had pompously made an official complaint.

He spent the next three years in Luxor, without formal support.

The 5th Earl of Carnarvon

George Edward Stanhope Molyneux Herbert was born on June 26, 1866. He was styled from birth as Lord Porchester, the only son of the 4th Earl. He was to the manor born, educated at Eton and Cambridge, inheritor of Bretby Hall in Derbyshire. He became the 5th Earl of Carnarvon on June 29, 1890.

Lord Carnarvon was an avid motor car driver, but suffered a serious accident in Germany, which badly and permanently damaged his health. England's winter climate no longer suited him, and he followed his doctor's advice and began wintering in Egypt. There he developed a keen interest in archaeology and Egyptian antiquities.

Carnarvon had the money to back his burgeoning interest in Egyptology, and sponsored an exploration of the tombs in the Valley of the Nobles. He employed the now-available Howard Carter to oversee the work. The two published *Five Years of Exploration at Thebes* in 1912, based on the work in the Valley of the Nobles. The success of that research led to Carnarvon receiving permission to conduct excavations in the nearby Valley of the Kings, again with Carter in the lead. Carter had figured out that most of the pharaoh tombs had been discovered, but that the tomb of little-known Tutankhamun was still unknown.

World War I disrupted the work, but excavations and studies began anew in 1917.

Nothing of note was discovered in the ensuing five years, and Carter was about to quit when he found evidence of a deeply buried tomb, still sealed. He immediately sent Carnarvon a telegram, urging him to come to the Valley of the Kings right away. He and his daughter arrived on November 23, and both were there when Carter cleared away the entry stairway the next day, exposing a still-sealed corridor bearing Tut's cartouche. The seal was removed and the corridor was cleared, exposing the door to the outer burial chamber. King, Carnarvon, and the daughter were amazed when the door was breached on **November 26, 1922**, one-hundred years ago.

MAJOR FAME

Carter immediately informed the appropriate Egyptian officials, who came to the tomb site the very next day. He broke down enough of the door to see an amazing array of artifacts. News spread like wildfire, and the tomb was officially opened on November 29, with a number of invited Egyptian officials in attendance.

The tomb showed some signs of illegal entry in ancient times, but the burial chamber, sarcophagus and golden mummy cover were intact, and over 5,000 burial artifacts, some mundane, some pure gold, were found.

The official opening of the burial chamber occurred on February 16, 1923. Carnarvon had sold the exclusive media rights to *The Times of London*, otherwise the news would have spread even faster. Exclusion of other papers, even those based in Egypt, caused a lot of resentment between Carnarvon and just about everyone else, including Carter. Egyptian authorities closed the tomb in retaliation, only re-opening it to research after Carnarvon apologized publicly.

The Tut tomb and its artifacts created a huge public sensation – “Egyptomania.” King Tut was featured in song and fashion, and artifacts from his tomb are still big-ticket display items even today. One can only imagine how things would have been had Carter uncovered one of the much-bigger tombs intact!

Carnarvon died soon thereafter (3/19/23), a victim of a mosquito bite and razor nick that caused blood poisoning progressing to pneumonia.

The intense interest in all things Tut attracted a lot of speculation and outright myth-making, [infamous](#) spiritualist Arthur Conan Doyle among them. A curse was allegedly written on the tomb walls threatening any who entered – a total fabrication, but many attributed Carnarvon's

early death to it, (in spite of the fact that none of the other two-dozen plus who entered the tomb initially were affected).

Carter retired from field work in 1932, after the Tut tomb had been fully excavated. He continued to winter at Luxor but never married, and had few friends. He died in London on March 2, 1939, from Hodgkin's Disease. His estate, such as it was, included 18 items taken from Tut's tomb without authorization.

CLARENCE KING AND THE GREAT DIAMOND HOAX

CLARENCE RIVERS KING

Clarence King was born on January 6, 1842, to a family engaged in trade with China. His father, consequently, was away from home much of the time, and died when Clarence was only six years old. He developed an interest in outdoor exploration and natural history, and was a good student. The family business kept his mother supplied with funds, until it fell on hard times and failed in 1857. Accustomed to a financially-comfortable life, and with a number of wealthy friends, Clarence suffered the loss of both father and funds greatly. His mother remarried in 1860, and his step-father financed Clarence's further education as he prepped for Yale.

Many scientists who gain professional prominence can point to one or two educators that helped guide and define their own career path. In King's case, a highly-regarded exploration geologist, James Dwight Dana, was an inspiration. After graduation, King became increasingly interested in the mountains of the world, including the Alps and the Sierra Nevada in the U.S., inspired in part by a lecture he heard delivered by the great geomorphologist and natural scientist, Louis Agassiz.

King was also a fancier of the arts, and developed expensive tastes, a rather unusual blend for a budding explorer. He had moved to New York and was living with a high school friend, James Gardiner, who was attending law school and hating it. King and Gardiner pulled up stakes and headed West, in 1863, traveling by rail to Missouri and by wagon train to Carson City. There they volunteered for the California Geological Survey, and began working with men whose names now grace a number of the peaks in the Sierra Nevada, including Josiah Whitney. King enjoyed the mountaineering life.

President Lincoln designated the beautiful Yosemite Valley as a "permanent public reserve" in September, 1864. King and Gardiner were appointed to make a study of the boundary of the new not-quite-yet-a-National-Park. They completed the survey successfully and returned to the East Coast by way of Nicaragua, where King contracted malaria. Back East, King, Gardiner, and Whitney worked on securing funding for additional surveys. Whitney managed to set King and Gardiner on a survey of the Mojave Desert under the auspices of the U.S. Army, and off they went. Upon the death of King's step-father, both he and Gardiner resigned from the Whitney survey and went back East. King had been thinking about his next project, and pitched a plan to secure its funding.

King was an excellent communicator, and governmental interest in understanding the development of the West the aftermath of the Civil War made funding of his planned survey possible. He was named the U.S. Geologist of the Geological Exploration of the Fortieth Parallel in 1867. James Gardiner was his second in command, and they assembled a team of excellent geologists, geographers, artists, and support.

The Survey explored the region from eastern California through Wyoming for the next six years. The scientific discoveries they made guided future exploration, and the report they generated created a lot of professional and public interest, the latter greatly abetted by King's book, *Mountaineering in the Sierra Nevada*, published in 1872. The Survey report was in eight volumes. The first in the series (although it was published later), also generated a lot of interest. Entitled *Systematic Geology*, it cemented King's place as an excellent explorer/geologist. The volume also contained a chemical analysis of the smelting process, which allowed efficiencies that made mine owners a LOT of money. His earlier study of the Comstock Lode had led to millions for commercial interests, too, so even though King had not made a lot of money for himself, he was widely recognized and respected as a valuable source of geological and technological information.

THE GREAT DIAMOND HOAX

The American West was seen as a mineral treasure house by many Americans, a reputation that began before the great gold rush of 1849. The Comstock Lode silver rush of 1859 reinforced the perception. But the Civil War and its associated political and economic disruption inhibited the immediate exploitation. Now that the war was over, a lot of would-be explorers were looking for the Next Big Thing when it came to mining.

Three ways of making a lot of money off mineral exploitation were common at that time. First, some gained great wealth from the production of valuable metals. Second, some gained great wealth supplying goods and services to the miners. And thirdly and sadly, some made great wealth swindling folks with phony mines or mine stock manipulation. Clarence King would soon cross paths with the third-named.

The Fortieth Parallel Survey report was just finishing up when the press began buzzing about a new discovery of rich deposit of diamonds at a non-revealed location, hinted to be Arizona. That might seem odd to you, but the newspapers of the day were full of stories about the real diamond rush in South Africa. The prevailing opinion was that the American West should also contain diamonds, especially in areas similar to those in South Africa.

Enter one Philip Arnold, a forty-niner with fraud in his heart. He had a small farm and family in Kentucky, but had his eyes on the Southwest. He was living in San Francisco, working as an assistant bookkeeper for an outfit called the Diamond Drill Company, and had an interest in, and access to, industrial-grade diamonds. He set up a fraud that would be called the "Mountain of Silver," set in New Mexico. He made himself the "Superintendent of Mining" for the scheme, and brought in a cousin from Kentucky.

Arnold had bigger plans for a much bigger swindle. He not only had a bag of industrial diamonds lifted from his employer, he had also acquired a number of uncut garnets and other minor gemstones from the Native Americans he encountered in Arizona.

Arnold and his cousin played their sophisticated con perfectly. Dressed in rough field clothes, and amplifying their southern accent, they arranged a meeting with a prominent San Francisco banker by showing a couple of their “valuable” gems. He called in some of his greed-oriented banker buddies. They were cautious, but bedazzled.

Some of the “gems” were sent to Charles Lewis Tiffany in New York, and he mistakenly over-valued the bait. The bankers fell for it hook, line, and sinker. Other investors were recruited, including two Civil War generals, George McClellan and Benjamin Butler, and Horace Greeley. An exploration company was being created to exploit the find, and stock in it was being prepared.

While all this was going on, Arnold made a trip to England to acquire more cheap stones. They had been very vague when asked where their diamond find actually was, implying that it was in the Arizona Territory. Meanwhile, the con-men went to northwestern Colorado, and used their cache of stones to “salt” an area that resembled the reported scenes from South Africa.

The bankers were still a bit leery, and covered their investment by hiring a mining engineer to inspect the diamond deposit. His party was led to the salted site by one of the con-men, and, surprise, surprise, a number of diamonds and other gems were found. The mining engineer had been offered a chance to buy shares of the mining company just created, so he staked claims all around the diamond site, publicly stated that the shares in the mining company were worth four times what he paid for them, and promptly sold out with a net of \$30,000.

The cousin took his share of the money the bankers had been paying out and was never seen again. Arnold kept the scam going, but prepared his escape, too, in case the swindle was exposed.

On October 6, 1872, the engineer and some of the diamond “finders” were on an Oakland-bound train, which just so happened to have one Clarence King and his survey team as passengers. King and company was aware of the commotion caused by the discovery, and talked freely with the engineer. Their familiarity with the geology of the American West and the engineer’s casual conversation made them recognize that northwestern Colorado was the “source” of the diamonds. They had surveyed the area thoroughly, and knew that diamonds and other gemstones, apart maybe from garnets, were not likely. King was worried that if it were true that he and his team had missed such a valuable prospect, it would undercut his reputation and ability to get government funding for future surveys.

Off King went to northwestern Colorado. Travel to such a remote location was a hardship on the best of days, and this was quite late in the season. Cold weather had already set in. King and his team found the alleged site of the deposit, aided in part by the discovery of the claim stakes laid out by the engineer. It was obvious to the trained geologists that there was zero chance of the mine site being the source of the gems; the area had obviously been “salted.”

King knew that plans were being made to sell stock in a company to mine the bogus claims, and it offended his sense of justice. He rushed back to San Francisco, arriving on November 10. He immediately confronted the engineer, and convinced him of his error. They met with the bankers the next day, who were horrified and asked for a delay in publishing the news until they had a chance to “sell short” their stock in the company. King refused. The bankers agreed to halt further stock sales, and asked King to lead an expedition with the mining company’s general manager to confirm King’s report. They made a quick trip back to the now-even-colder site, and the manager saw that it had all been a fraud.

The *San Francisco Chronicle* ran banner headlines the “MAMMOTH FRAUD” on **November 26, 1872**, 150 years ago. The *Chronicle* editorialized, “We have escaped, thanks to GOD and CLARENCE KING, a great financial calamity.” You are forgiven if, when reading about this, you smirked at the apparent justice of a bunch of greedy folks, many of whom had amassed at least some of their fortunes through less-than-strictly-honorable/legal means, getting snookered by two apparent rubes. The *Chronicle* had great fun with this, too. A lot of reputations were tarnished, and deservedly so.

Arnold didn’t make much effort in covering his tracks. He returned to Kentucky, bought a nice house and considerable farmland, confident that those he swindled would not want a public trial that would further damage reputations and show just how gullible the bankers were. He was indicted, but never brought to trial. He eventually settled out of court for \$150,000, a small portion of what he took. His cousin was gone, although research long after the fact showed that he had likely gone to St. Louis and worked as a casket builder before going West again, ending his days as an undertaker in the now-ghost mining town of White Oaks, New Mexico.

[ASIDE: The reason White Oaks died is that its leaders tried to charge too much money to allow the planned transcontinental railroad to come through the region. The leaders of Carrizozo to the south were more accommodating, got the railroad, and White Oaks faded into obscurity along with its mines, and its undertaker. The magnates got revenge on the swindler/undertaker without even knowing it.]

Clarence King’s fame was cemented with his highly-publicized role in exposing the hoax. He was already recognized for his geographical surveys, and more were being planned. Congress decided to create an agency, the U.S. Geological Survey, to oversee the surveys in 1879, and President Hayes nominated King to be its first director.

King accepted the post with the proviso that he would hold it only long enough to get the new agency up and running. He had become accustomed from youth to appreciate the “high life” and had acquired expensive tastes, including art. His surveys and writings had made a lot of money for others, but not so much for himself, and he was deeply in debt. He felt he could make more money as a consultant and writer than he could in a low-paid Federal post. He was succeeded by John Wesley Powell of Grand Canyon exploration fame, in 1881.

CODA

Clarence King was a complex person. He was a well-educated explorer, honest about exposing the Diamond Hoax, but his life, too, was touched by fraud. Committed by him.

A few years after leaving the U.S. Geological Survey, he met and fell in love with Ada Copeland, a black former slave he met in New York City. Racial matters were still awful in this pre-Civil Rights era, and marriage between a white man and black woman was greatly frowned upon, and in some places, outright illegal. Some states even had odd rules about what kind of genealogy constituted “Black” and “White;” for example, if only one of one’s eight great-grandparents was “black,” then you were black, regardless of your skin tone. Even though King had blue eyes and a fair complexion, he was able to convince Ada he was a black Pullman porter, concealing from her his true identity, calling himself “James Todd.” Ada accepted his extended absences as being part of Todd’s job. They had five children together.

King had suffered a number of illnesses in part due to the rigors of his exploration. He died of tuberculosis in Phoenix on December 21, 1901. He wrote a letter to Ada, confessing all, on his deathbed.

I hope you have enjoyed these two stories, each with a very round-number anniversary these next two weeks. There is a minor connection between the King story and A+StW’s focus on aviation, astronomy, and Space exploration. The U.S. Geological Survey was tasked with the assessment of possible Apollo landing sites on the Moon, and its Astrogeology Science Center was established by famed planetologist [Eugene Shoemaker](#) in 1961. It was first located in Menlo Park, California, but soon moved to its present site in Flagstaff, Arizona.

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