

YERKES ARISES

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The so-called refracting telescope, the kind of through-the-lens device the pirates once used, was perfected in 1609 in Venice by Galileo Galilei, and was valorized in 1897, when the grandest such scope ever was unveiled as Yerkes Observatory on the north shore of Wisconsin's Geneva Lake.

The birth, life and rebirth of Yerkes Observatory is a tale of almost biblical proportions, if for no other reason than the drama that has surrounded this

classical structure that houses a mammoth masterpiece of steel and glass that was and is today the world's largest lens-type telescope.

I've tried to resist but excuse me if I speak of Yerkes in "purple prose," as, after 15 years of turmoil, this truly historic monument to human ingenuity now has a bright future.

As someone who has spent a career in public relations, it is gratifying to note that with Yerkes Observatory, as with all other giant constructions of man, relationships lie at the core of its success. I'll begin this epic story talking about the daring 19th century innovators who created the world's first astro-physics lab, a new cutting-edge aspect of science, that would lead mankind into the next century and eventually into space exploration.

Then, I'll touch on a few highlights of who and how Yerkes made history throughout the 20th century. And then, the finale: the near obituary of Yerkes, and the story of years of struggle by many dedicated people, leading to its resurrection as a new astronomical resource for the 21st century, under the auspices of the new Yerkes Future Foundation.

So, here are the stories, some known, some not well-known, of the birth and life of Yerkes.

Like the confluence of great streams, in this case the roles of three late 19th century Chicagoans flowed together in the creation of the world's largest refracting telescope and America's first astro-physics laboratory. They were William Rainey Harper, the "boy president" of the new University of Chicago; the infamous Charles T. Yerkes,

unscrupulous entrepreneur and father of Chicago's Loop elevated; and George Ellery Hale, founder and first director of the new observatory.

To begin, the first star of the founding cast was the 35-year-old William Harper, first president of the brand-new University of Chicago. He was brought on in 1891 by John D. Rockefeller, of Standard Oil fame and infamy. They were both Baptists. Harper was a pudgy prodigy. High School graduate at 10, a college graduate at 14, a grad student at 17 and a Yale Ph.D. a month before his 19th birthday. He was fluent in Hebrew, Sanskrit, and Greek. He became a professor at Yale and was a leader of the Chautauqua movement.

Harper wanted UC to be a secular, though religiously oriented university, emphasizing

graduate education and research. It would have feeder colleges, such as Bradley University in Peoria, founded by one of America's richest women, Lydia Moss Bradley, the first woman in America to personally fund such a new institution.

As a sidelight, Bradley is my own alma mater, which I attended for two years in the early 60s, before being dismissed for fraternity hijinks. I then matriculated as a student-at-large at UC in Chicago, and after dealing with the likes of ancient Greek rhetoric and expressionist drama, I returned to Bradley to graduate in journalism. The two universities were not only linked by their founding leaders, but famed architect Henry Ives Cobb, famed as a creator of the buildings of the 1893 Chicago World's Fair, designed the first campus building at UC and Bradley, then the historic rococo structure of Yerkes Observatory at

Williams Bay, Wisconsin. Ives was also the architect behind the Newberry Library and the Chicago Opera House.

Back at UC, Harper went after strong educators, and one he brought aboard was George Ellery Hale, a 25-year-old astronomer whose father was a wealthy man and had built the substantial Kenwood Physical Observatory for his promising son. George came recommended in 1892 by Asaph Hall, discoverer of the two moons of Mars, who wrote of Harper, “he is devoted to his branch of astronomy and his father is very supportive of his son’s investigations.” After arm-twisting, young Hale joined the new university as a professor, bringing along, at his father’s insistence, his own powerful observatory, with his father agreeing to help raise \$325,000 or more for a new larger telescope.

Hale soon attended a summer meeting of the American Association for the Advancement of Science and learned of a tantalizing opportunity. Two giant forty-inch glass disks, cast in France, intended for a new observatory at Mount Wilson, California, became available for purchase. The firm of Alvin Clark and Sons was commissioned to grind and polish the powerful lenses, but funding for the overall project collapsed. The Clarks' were left with the lenses and a bill for \$16,000 to due a Paris glass company.

Hale recognized this as an opportunity for the University of Chicago, and hurried back to Harper, who in turn realized this was just the sort of project to take to rail king Charles Yerkes. Harper drafted a proposal and his letter caught Yerkes' attention. They had little trouble closing the deal

with him. Yerkes was a hated man, and underwriting the great observatory promised to resurrect his reputation. Now, more than 100 years later, he is better remembered for establishing the observatory than becoming one of Chicago's great robber barons and the man who transformed the political payoff into an artform.

Yerkes was one of the most colorful and controversial figures of Golden Age America. He became a streetcar magnate by masterminding Chicago's Loop Elevated and then the London Underground. After losing a fortune and being jailed for financial improprieties in Philadelphia, he schemed his way out of prison and moved to Chicago. While he incurred the wrath of thousands of Chicagoans displaced by his rail empire, and angered the press by flouting his political

maneuverings, he forged one of the world's finest mass-transit systems in Chicago.

Yerkes left Chicago a bitter man and moved to London to establish their cherished Underground.

From the beginning, Hale planned Yerkes Observatory for astro-physics – a very new concept in 1892. Hale had become director-to-be of the world's largest telescope, which was exhibited for the first time as the highlight of the Manufacturer's Building at the 1893 Chicago Columbian Exposition. And, he had become secretary of America's first world astronomy meeting, which he had organized.

Harper and Hale, in seeking a site for the new Yerkes Observatory, never considered a location more than 100 miles from the university. John

Johnston Jr., a wealthy Chicago real estate developer, proposed a site on Geneva Lake, about halfway between Chicago and Madison. Johnston donated one of several sites he owned near Williams Bay of 50 acres for the observatory. It would be free of any state and local taxes. A further advantage, Johnston wrote Harper, was that any needed legislation could be had “easier and cheaper” in Wisconsin than in Illinois. Several wealthy Chicago families, including one University of Chicago trustee, owned palatial homes on Geneva Lake. A former University of Wisconsin president who Harper had lured to UC to head the Geology Department, recommended the location on a bluff because it would have a clear view across undeveloped land to the south overlooking the lake. He emphasized to Harper the relative high hills, the absence of factories and that the

lake area was a summer resort for the “choicest people of Chicago.”

On a cold December day in 1893, Harper, Johnston and architect Henry Ives Cobb, picked the exact spot, that in the words of the local newspaper, “without doubt will be the location of the world’s greatest wonder.”

Hale designed Yerkes for astro-physical research. He included spectroscopic and physical laboratories as well as several photographic darkrooms. In the interim, Hale created the *Astrophysical Journal*, still published today, to be based on technical papers, while the newly created *Popular Astronomy* magazine, which I’ve long loved, aimed at teachers and amateur astronomers.

Cobb, the university architect, converted Hale's general design for Yerkes into detailed building plans and construction began in spring of 1895. The forty-inch lenses were finished in September 1897 and carefully shipped by train to Williams Bay. The lenses were then transported by a horse-drawn wagon up to the observatory and installed the next day into the giant telescope. The very next night, Harper and a group of trustees and officials came out via private rail car and were picked up by several steam yachts which took them to the observatory, where they marveled at the newly installed monster telescope, and began sample viewing the cosmos.

Several days later the giant elevator floor, the largest in the world to this day, which was raised or lowered to keep the observer near the telescope, collapsed. The floor was smashed to

pieces. Had it happened the evening of May 2st, half the officials of UC and the entire astronomy Department might have been killed. The rebuilt floor has held firm ever since.

In 1897, the observatory was ready to open, and the Chicago Herald Tribune gushed, “Charles T. Yerkes has written his name in the book of the immortals – building a monument to himself that will endure as long as the world lasts.”

The architect Henry Ives Cobb had specially designed the observatory to appeal to Charles’s love of the grandiose – and to his vanity. Laid out in the form of a Greek cross, the building boasted opulent interiors and a fabulous Romanesque façade complete with shield-bearing gargoyles. In a nice touch, Cobb decorated the shields with a

bold letter “Y” to let visitors know whose observatory it was.

In a cheerful mood, Charles Yerkes could not resist cracking a joke. “Don’t be surprised if a few comets and new stars are discovered through that big tunnel – or I should say telescope.” Only those journalists who knew how important tunnels were to Charles’s career would likely have laughed at this somewhat obscure reference.

Even Charles Yerkes acknowledged that there was more to life than making fortunes, when he made these comments during the dedication of the observatory on October 21, 1897, “There is nothing of moneyed value to be gained by the devotee to astronomy…there is nothing he can sell…Consequently, the devotee of astronomy has as his only reward the satisfaction which comes to

him in the glory of the work which he does and the results which he accomplishes.”

Several years later, the architectural landscape firm of the Olmsted Brothers created the plan for the 50-some acres on the bluff surrounding the observatory. They are the same firm that designed New York City’s Central Park and the 1893 Columbian Exposition in Chicago. Just a few years ago, a study revealed that Yerkes Olmsted woods and gardens still has some 7 state record trees.

For the next century, Yerkes stood either at the forefront of global astronomical research or as a major player. On his first trip to America in 1921, astro-physicist Albert Einstein is supposed to have said that the two musts on his tour should be Niagara Falls and Yerkes Observatory. While visiting the University of Chicago, the school

arranged for Einstein and a group of educators to take the train up to Yerkes to view the 40-incher. Observatory director Edwin Frost said, “He left a most agreeable impression of his personal character as well as of his great intellectual power.” A comment by Einstein himself, surely unrelated to that visit to Williams Bay but related to the science of astro-physics, goes, “Only two things are infinite, the universe and human stupidity, and I’m not sure about the former.”

In 1933 the Chicago World’s Fair was officially opened, to the thrill of thousands in the Science Hall and listening on radio, when the lights of the fair were activated by monitoring light at Yerkes emitted from the star Arcturus, detected by a newly invented photo cell and converted to an electrical signal transmitted to Chicago. This light had begun its travel to earth 40 years before,

when the giant telescope was unveiled at the World's Columbian Exhibition in 1893.

Renowned astronomer Carl Sagan, who made astronomy popular in the 90s with his TV series *Cosmos*, earned his master's degree at Yerkes. He wrote: "The universe is not required to be in perfect harmony with human ambition." Ironically, he once raised the Yerkes elevator floor so rapidly that it crashed into the telescope. Edwin Hubble also studied there. Hubble, who later inspired the Hubble Space Telescope, said, "Equipped with his five senses, man explores the universe around him and calls that adventure science."

Other renowned astronomers at Yerkes included Gerhard Herzberg, Nobel laureate in chemistry and Subrahmanyan Chandrasekhar, who earned his 1983 Nobel Prize in physics there. I remember

visiting Chandra's office many times to visit Jim Gee, my good friend and 20-year director of operations at Yerkes, who also headed engineering for UC. The office curved around a portion of the main dome, which had an arc of bookcases containing decades of astro-physical artifacts.

At Yerkes, astronomer Gerald Kuiper identified a distant string of space rocks which later came to be known as the Kuiper Belt. Other discoveries made at Yerkes included identifying the earth's position as part of the spiral galaxy, the Milky Way.

Yerkes contributed in later years by collaborating with other observatories around the world on revolutionary projects, including the development of the Sloan Digital Sky Survey, a three-

dimensional map of millions of galaxies outside the Milky Way. Yerkes scientists also developed the High-Resolution Airborne Wideband Camera, to fly on NASA's Stratospheric Observatory for Infrared astronomy, called SOPHIA.

The giant lens telescope at Yerkes stands within a dome 90-feet in diameter and 68 feet tall. The telescope itself is 64 feet long and weighs, with its mounting, 82 tons. A Spiderman figure once hung comically on high inside the great dome, apparently placed there as a joke between two astronomers. In addition to the still fully operational 40-inch refractor, Yerkes is also home to two more modern reflecting telescopes, the 24-inch and the 41-inch, each in their own smaller domes within the observatory building.

Yerkes houses a unique collection of photographic plates documenting 120 years of observations, which can be used in support of space navigation, determining star shifts over more than a century.

In 1989 the obvious historic significance of Yerkes resulted in the observatory being nominated for designation as a National Historic Monument. The National Park Service of the Department of the Interior concluded, “Yerkes has forever changed the science of astronomy and the concept of the modern observatory.” Not surprisingly, in light of later developments, the University of Chicago refuted the recommendation, holding that it was too restrictive to future development.

The overall function of the observatory over its long history has been to gain new insights into how galaxies are formed and how they are

changing, and is now poised, now that it is owned by the Yerkes Future Foundation, to continue to educate and inspire new generations in their own quests into space. Yerkes is a teaching institution of monumental historic proportions in the exploration of the heavens.

So, you are probably wondering, why and how did Yerkes cease being relevant to the University of Chicago, and finally, after years of struggle, come into the hands of a new foundation in a small lake town area?

That story had its beginnings in the 1960's, when the university began supporting even more advanced astronomical hardware. The state-of-art in science represented at Yerkes began to age almost as soon as the giant refractor near the edge of Lake Geneva was built. The location once

considered ideally distant from the observation-killing smog surrounding Chicago, had itself been topped by observatories set high in the mountains. The peak of the refracting telescope technology was long superseded in several ways by increasingly powerful reflecting telescopes.

While Yerkes continued to contribute important research, science and education to astronomy hopefuls, it was to some extent eclipsed. Somewhere in the early 2000's, the University decided to sell-off Yerkes to the highest bidder. In 2004 we read in the local Lake Geneva paper that the observatory and its site were going to be sold to an un-named eastern company for redevelopment as a resort and residential community of houses.

The lake community was aghast that its greatest scientific and historic complex was being so rudely treated. I had recently been elected chairman of the Geneva Lake Conservancy, a not-for-profit dedicated to conserving and protecting the lake area's natural resources. Not only was the future of the observatory itself threatened, but the forested grounds, including its deeply wooded 550 feet of shoreline would be largely plowed under. This property had remained undisturbed since the Observatory was developed in the 1890s.

As a recently retired public relations executive, I wondered if the famed university might be cajoled into canceling their plans and return Yerkes to its scientific and historic purposes, not just for the benefit of our lake community, but for mankind.

After much discussion with our Conservancy board and friends throughout the community, I sat down over coffee with our group's founder and discussed how to bring UC to their senses. One of my ideas was to use my communications background and contacts to engage the Chicago and Milwaukee news media, in addition to our local press. I called editors, reporters and wrote op-eds. I even met personally with the editorial boards of the Chicago Tribune and the Milwaukee Journal Sentinel.

This was my op-ed that ran in the Tribune:

“Title: The Heavens in Decline?

“The home of American Astronomy is under attack, not from aliens, but from the revered educational institution which gave it life 100 years

ago. Yerkes Observatory, home of the world's largest conventional telescope, a 26-ton goliath, and the site where many significant astronomical discoveries have been made through the 20th century, is now, at the dawn of the 21st, been put on the auction block by its creator and owner, the University of Chicago.

“The university has been in negotiation since last summer with an unnamed east coast developer that plans to fill its heavily wooded lakeside grounds with week-end homes and a European-style spa. Like the personification of a society in decline, the halls and grounds long trod by Einstein and Hubble among the world's great astronomers and scientists, may soon be the site of modern bar-be-ques and bacchanals. The last 550 feet of rustic, unspoiled lake edge on historic Geneva Lake, still looking much as the Native

Americans left it 160 years ago, may become some millionaires front yard, abuzz with jet skis and afloat with chocolate martinis.

“What happened at this proud university, endowed with billions, which prompted it to plan to cash-in its historic Yerkes, where research equipment headed for the stratosphere is still being fabricated in the labs of its fabled structure, and where great telescopes still probe the heavens? Does the university need the \$10 million selling price so badly that it would abandon a unique part of its own heritage for a housing development and some hot tubs?

“Local citizens and institutions at Geneva Lake are now meeting, asking this question, and wondering why the great university 80 miles away has not asked itself, and them, how Yerkes might continue

to contribute great things into the 21st century. It is ironic that even a great repository of learning and insight like the University of Chicago, seems so ready to discard this global icon of astronomy and history, a child of its own dreams of the heavens, and a site with so much seeming potential for the future. Must this link to the heavens be forever closed or will a new day and a new vision for the future be forged on the shores of Geneva Lake, Wisconsin.”

The last 15 years, since that initial shock, have been a rollercoaster. The university soon announced the property was to be sold to an east coast developer of shopping centers, who had opened a European-style spa resort on a lake in upstate New York, and while the developer said he wanted to preserve the observatory building, made it clear through his heavy development plans for

houses surrounding the observatory and an elaborate lakeside resort, that these things would obviate all future scientific viability of the world-famous observatory.

Outraged by the university's intentions, a group of concerned local citizens and organizations, calling themselves the "Yerkes 21 Committee," banded together to face the behemoth university. The name "Yerkes 21," which I coined, signified the meaningful role the observatory and its beautiful grounds could play in the 21st century.

Given only weeks to come up with a proposal, in June of 2005, the Yerkes 21 committee, headed by revered local Lake Geneva historian Larry Larkin, put before the University of Chicago a plan to preserve and protect what the community saw as "the spirit and soul of our community." The

committee proposed the formation of a not-for-profit corporation with a community-based board of trustees that would administer the site and facilities.

As a member of that group, I was quoted in a local paper as saying, “The university of Chicago has been an accidental conservationist, but we hope they realize this as an opportunity to be intentional.” After all, the university, with an endowment of 8.5 billion dollars, up 8 times over the past 25 years, was ready to walk away from this historic and still operational facility that cost just a few hundred thousand a year to staff and operate. I guess the old saying sort of fits, “If you can’t see it, you can’t be it.”

Other groups stepped forward with their plans: Aurora University’s George Williams campus, next

door to Yerkes on the lake, made a proposal to acquire and operate Yerkes. The owner of a famous clock museum in Rockford wanted to reestablish his collection of clocks in the halls of Yerkes. Other business interests also appeared.

A community group of hundreds in Williams Bay, the lakeside village in which Yerkes stands, held rallies and confrontations with UC executives objecting to the outside proposals. The regional news media onslaught against UC continued unabated.

In the end, UC totally withdrew their sale plans and formed a committee of university and community members to craft a plan for the continued operation of the observatory. UC had seemingly seen the light, and all looked well for

another century of Yerkes operation. But it was not to be.

Early in 2018, UC summarily and unexpectedly announced that they would permanently close down Yerkes in the fall, dismiss the staff, and that any entity that wanted to make them a proposal to acquire the site was welcome to come forward.

Within weeks of that harsh announcement, with the support of good friend, Jim Gee, who was retiring as long-time operations director of the Yerkes staff, and was serving as president of the Geneva Lake Museum in the city of Lake Geneva, I invited leading citizens, to discuss ideas for the future of Yerkes. Almost 50 people appeared at the museum. We discussed the distinguished history of Yerkes, and the previous and current plans of UC to treat it as so much surplus

property. The next day, one of those present, Dianna Colman, a Harvard MBA and dynamic community leader who resides in Williams Bay, who had been a guiding light for several local causes and their fundraising efforts, called me and said she had to be involved.

Within days we put together a plan to create a new not-for-profit to be called the Yerkes Future Foundation and began to assemble as directors a small group of influential local people representing the fields of law, business, psychiatry, entrepreneurship, and marketing. Dianna was elected founding chair and I founding vice chair. The Yerkes directors are all hands-on leaders in resurrecting the observatory.

We submitted a proposal to take ownership of Yerkes and restore it scientifically, educationally

and historically. Almost another year of protracted negotiations with UC ensued. Our proposal was finally accepted on May 1st of this year. I had originally planned to present a Yerkes essay to the club in the fall of 2018, assuming that the new ownership would have become a reality by then. But it took a lot longer to get the deal done.

Ownership of the observatory and its telescopes and historic content, including the surrounding 48 acres of Olmsted Gardens land, was finally transferred to the Foundation.

As this is written, the Williams Bay community is still concerned about the university's desire to sell for residential development. the nine acres of lakefront shoreline that was originally part of the observatory complex.

Meanwhile, since May, the Yerkes Future Foundation has received much support from far and wide and is moving ahead to rehab Yerkes into an observatory for the future.

Our focus is on scientific education, and UC and other prominent institutions and educators have indicated they want to participate. The building is already in the midst of renovation, with workmen restoring the great dome, electricians swarming to update the 120-year old electrical system, a solar power system planned, a search underway for a new Executive Director, and major fund-raising has begun. We hope that in 2021, Yerkes will begin to reopen and will be ready to start to regain its prominence in astro-science, education and as a prominent historic site of astronomy achievements.

While the terms of our acquisition from UC remain under wraps through a non-disclosure agreement, we have already begun to engage major donors towards the estimated 20 million dollars that will be needed to restore and improve the site over the next decade. So, if you or someone you know may be interested in joining the growing team that is helping pioneer a new future for Yerkes, please let me know, or go to our foundation website at www.yerkesobservatory.org.

In less than two years, Yerkes will be 125 years old, and we trust, headed strongly on a fresh trajectory to the stars, to further improve a new generation's understanding of the universe.

Indeed, in the 21st century, Yerkes Arises, again.