THE OBSERVER

The Newsletter of Central Valley Astronomers of Fresno May-June 2019

A Black Hole Imaged

On April 9, a world-wide scientific organization known as the Event Horizon Telescope Consortium announced that it had taken the first image of a black hole. Using eight radio telescopes throughout the world and gathering an estimated 50 petabits of information, the consortium, using complex software, created an image of the object at the center of the giant elliptical galaxy in Virgo, M87, which had long been suspected of harboring a black hole. Although the event sounds like a contradiction, since black holes have such powerful gravitational forces that nothing can escape them, including light, the image shows a black circular feature surrounded by its accretion disc, material which is spinning around the hole and being slowly drawn into it. The disc is hottest(and brightest) where it is the most energetic, which is what many scientists predicted.

Image from EHT Consortium, 2019

Observer Quote of the Month-

"The 200" Hale Telescope, the dreadnought of all telescope designs, was the masterwork of Depression-era engineering. There was nothing like it before; there has been nothing like it since..."

-Richard Preston, from his book *First Light*

In this Issue-

Central Valley Astronomers

Web address
www.cvafresno.org

Webmaster-Scott Davis

Officers and Board- 2019

President-
Scott Davis

1st Vice-President-
Steve Britton

2d Vice president-
Lynn Kleiwer

Secretary/Treasurer-
Steve Harness

Star Party Coordinator-
Brian Bellis

Historian/Observer Editor-
Larry Parmeter

Director-
Warren Maguire

Director-
Clarence Noell

Director-
Joe Griffin

M87, the great galaxy in Virgo, which contains the black hole that the Event Horizon Telescope Consortium imaged. M87 is thought to be the largest galaxy known, with an estimated five trillion stars, and well over 2,000 globular clusters surrounding it. It has been measured as being about 55 million light years from Earth. The jet coming out of its center is believed to be generated by the black hole.
Image by NASA

Larry Parmeter is the editor of *The Observer*

He can be contacted at 559-276-8753 or at lanpar362@gmail.com

Number of exoplanets found as April 2019- 4,036

How many more are out there?

Tens of thousands? Hundreds of thousands?

Profiles in Astronomy

Wilhelm Anderson 1880-1940

Anderson was born in Minsk, now in Belarus, into a German family that was originally from Estonia. His father was a university professor and his older brother was a well-known mathematician. Anderson was educated at Kazan University, and afterwards taught physics at a private school in Minsk. His family then moved to Tartu in Estonia, where he received a masters degree and then a doctorate in astronomy from Tartu University. He taught physics and astronomy at Tartu until the Germans overran and occupied Estonia in 1939, when he was sent to Germany to work. He died shortly afterwards, in 1940. Since, by 1939, he was having bouts of mental illness and was physically weak from various ailments, some historians believe that he may have been a victim of the Nazis' euthanasia campaign.

Anderson is best known for his work on the structure and evolution of stars, especially white dwarfs. He calculated the limit of mass for a white dwarf, an important step in understanding the final stage of the life of a star. He collaborated with another astronomer, Edmund Stoner, on the properties of white dwarves, and their studies resulted in the Stoner-Anderson equation, further detailing the mass limit of white dwarf stars. An asteroid is named in his honor.

Source and image: Wikipedia

CVA's Spring and Summer Activities

To all CVAers-

Centeral Valley Astronomers, as every year, has a number of activities planned for the spring and summer. Try to participate in as many as you can. Here are just a few of them.

Eastman Lake starwatches-May 4, June 1, July 27, August 3, August 31
Courtright starwatches-June 28-29, July 26-27, August 2-3 and 30-31
Big Stump(at Sequoia N. P.) starwatches-June 1, June 29, July 27, August 3, August 31
Public starwatches at Riverpark-May 11, June 8, July 6, August 10, September 7
Public starwatches at Millerton Lake(boat ramp on west side)-June 22, July 20, August 24
Public starwatch at Glacier Point-TBA

Club meetings at Fresno State-May 18, June 15. No meetings in July and August. Club meetings will resume on September 14

Coming up in the Fall 2019-
Sequoia N.P. Night Sky Festival –September 6-7
Annual CVA Star-be-que-Eastman Lake on September 28

The CVA Leadership Over the Years

From the editor-

About three or four years ago, Louis Mendoza, the longtime secretary and treasurer of CVA, gave me a box containing literally hundreds of old **Observers.** ***I spent almost a year going through them and organizing them into binders. The most recent are from only a few years ago; the earliest date from the mid-1970s. Last summer, as club historian as well as editor, I started a listing of the club officers. Below are the presidents and vice-presidents of CVA as far back as I was able to find. Other officers will come with future issues.***

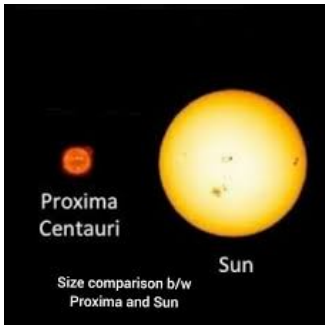
	President	V-President	2d V-President	3d V-President
2018	Scott Davis	Steve Britton	Lynn Kleiwer	
2017	Lynn Kleiwer	Steve Britton	Fred Lusk	
2016	Lynn Kleiwer	Steve Britton	Fred Lusk	
2015	Chad Quandt	Steve Britton	Fred Lusk	
2014	Fred Lusk	Steve Britton	Randy Steiner	
2013	Fred Lusk	Steve Britton	Randy Steiner	
2012	Randy Steiner	Dale Lohrman		
2011	Randy Steiner	Dale Lohrman	Steve Harness	
2010	Steve Harness	Dale Lohrman	Fred Lusk	
2008	Steve Harness	Dale Lohrman	Fred Lusk	
2007	Fred Lusk	Dale Lohrman	Greg Morgan	
2006	Fred Lusk	Dale Lohrman	Greg Morgan	
2005	Greg Morgan	Fred Lusk	Brian Bellis	
2004	Brian Bellis	Greg Morgan	Randy Steiner	
2003	Brian Bellis	Greg Morgan	Randy Steiner	
2002	Randy Steiner	Brian Bellis		
2001	Randy Steiner	Steve Harness		
2000	Steve Harness	Randy Steiner		
1999	Steve Harness	Randy Steiner	Dave Lehman	
1998	Dave Lehman	John LeFay, Jr.		
1997	Dave Lehman	John LeFay, Jr.	Matt Mazurek	
1996	Matt Mazurek	Dave Lehman	John LeFay, Jr.	
1995	Matt Mazurek	Dave Lehman	John LeFay, Jr.	
1994	Matt Mazurek	Chris Locke	John LeFay, Jr.	
1993	Matt Mazurek	Chris Locke	Shorty Pounds	
1992	Matt Mazurek	John LeFay, Jr.	Chris Locke	
1991	Matt Mazurek	John LeFay, Jr.	Clarence Funk	
1990	Clarence Funk	Matt Mazurek		
1989	Clarence Funk	Matt Mazurek	Marty Roberts	John LeFay, Jr.
1988	Clarence Funk	Matt Mazurek	Marty Roberts	Rick Hill
1987	Clarence Funk	Marty Roberts	Rick Hill	
1986	Irene Day	Clarence Funk	Pat Daniels	
1985	Pat Daniels	Fred Napier	Clarence Funk	
1984	Jan Ellezy	Donna Meyer	Bobbie Mills	
1983	Clarence Funk	Donna Meyer	Bobbie Mills	
1982	Clarence Funk	Donna Meyer	Jan Ellzey	
1981	Clarence Funk	Donna Meyer	Marshall Smith	

	CVA President	V-President
1980	Clarence Funk	Terry Boone
1979	Clarence Funk	Terry Boone
1978	Clarence Funk	Gary Baxter
1977	Clarence Funk	Gary Baxter
1976	Darryl Daniels	

Star Stories

Proxima Centauri

Proxima Centauri, also known as Alpha Centauri C, is the closest star to our own, at 4.2 light years from Earth. It is overshadowed by its two much larger companions in the Alpha Centauri system, A and B, and was not discovered until 1915 by Robert Innes, a Scottish-born astronomer at the Union Observatory in Johannesburg, South Africa. Because of this, it is also sometimes called Innes's Star. It is a red dwarf star about 1.5 times the size of Jupiter, is a UV Ceti type, a "flare star,", with an apparent magnitude ranging from 10.5 to 11.1 and an absolute magnitude of 15.6. Centaurus is a southern constellation, and Alpha Centauri is in the lower part of it, so Proxima Centauri can only be seen by people who live south of 27 degrees N. latitude. The term "Proxima" means "closest" or "nearest" in Latin.



Because Proxima Centauri is so close to the Earth, a good deal is known about it. It has a mass of about .15 that of the Sun, and also has a very strong magnetic field, which accounts for its flaring properties. It also has a very high density, approximately 33 times that of the Sun. As such, it has very slow fusion times, and scientists estimate that it will remain a main sequence star for over three trillion years. Scientists have been able to observe dark spots on its surface, the same features as our sunspots.

In 2016, Proxima Centauri was found to have a small planet companion, which has been designated Proxima Centauri b, or Alpha Centauri Cb. This object orbits the star every 11 days at a distance of about 3.6 million miles, and has a mass about 1.3 times that of Earth. Some researchers believe that it may have the conditions for life, but others, noting that its sun is a flare star, strongly doubt that it could support life.

Bad Astronomy Story

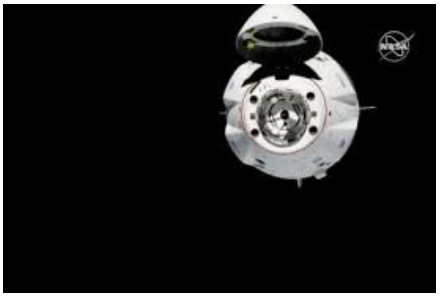
Two astrophysicists are discussing their research in a bar one evening when a drunk who overheard them in the next seat turns and says in a very worried voice, "What was that you just said?"
"We were discussion stellar evolution, and I said to my colleague here that the Sun would run out of nuclear fuel and turn into a red giant star in about 5 billion years, possibly melting the Earth."
"Whew!" says the drunk, "You really had me worried. I thought you said 5 million."

From astrobob.areavoices.com

What's New in Space

Dragon V2 Advances-Sort Of; Starliner Slips Again

Space-X's Dragon V2 successfully completed its first unmanned test flight, a six day mission to ISS, on March 8. However, on April 20, while its emergency escape rockets were being tested, it suffered what NASA and Space X are calling an "anomaly." Little is being said, but reports are that the escape rockets may have exploded during the test. Its first manned flight is scheduled for October, but this setback may delay it until 2020. In the meantime, Boeing's Starliner spacecraft, which was scheduled to make its first unmanned flight in April 2019, has been delayed again, to August. Even if that goes well, it will probably not make its first crewed flight until at least December 2019 or even in 2020. Boeing's Starliner, which was initially expected to be the hands-down winner in NASA's commercial spacecraft competition, appears to be falling farther and farther behind Space-X. It also comes on the heels of Boeing's problems with its 737 Max aircraft, which has been involved in two fatal crashes, and has been grounded by several airlines and countries.



Right-Dragon V2 approaching ISS on March 3, 2019. Image from NASA

Another Pioneering Astronaut Slips Among the Stars

Owen Garriott, a member of the first group of American scientist-astronauts, died on April 15 at the age of 88 at his home near Huntsville, Alabama. The cause of death was not given, but is believed to have been from natural causes.

Garriott was born and raised in Oklahoma and educated at the University of Oklahoma. He later earned a doctorate in electrical engineering from Stanford University, and taught engineering at Stanford before being chosen by NASA as one of six astronauts in 1965. One of his fellow scientist-astronauts was Harrison Schmitt, who would walk on the moon with Apollo 17. His first space mission was on Skylab 3 in 1973, when he spent 59 days aboard the space station. He also flew aboard the space shuttle on STS-9 in 1983, the first mission of the European-built SpaceLab. Afterwards, he became an administrator for NASA. He left NASA in 1986 to work in private industry. His son, Richard Garriott became a very wealthy video game software developer, and in 2008, paid RKS $30 million to fly to ISS aboard Soyuz TMA-13, making him the first American second generation astronaut. In recent years the senior Garriott wrote several books on Skylab and his experiences as an astronaut with NASA. His death marks another milestone in the dwindling group of 1960s astronauts, all of whom are in their eighties and nineties.

The Second American to Spend a Year in Space

On April 17, NASA announced that Christina Koch, who flew to ISS in March and was originally scheduled to return to Earth in September, will now spend almost a year on the space station. She will return in February 2020. This is due to a reshuffling of Soyuz missions following the October aborted mission of Soyuz MS10, and to allow an astronaut from the United Arab Emirates to spend a week aboard the space station in the fall. NASA also wants to do further studies on the effects of long term space missions, especially since evidence shows that women's bodies react somewhat differently from men's to extended exposure in an outer space environment.

Apollo 11-The Road to The Moon

A chronology of the First Moon Landing Program-Part 1

Late 1959-With the Mercury program underway, a group of NASA engineers and managers begin discussions for its followup: a multiman spacecraft capable of long duration Earth orbit missions, circumlunar flights, and eventual Moon landings. The craft is given the name of Apollo.

Mid 1960-NASA asks three companies(Martin, Convair, and General Electric) to submit proposals for a multiman spacecraft, then rejects their designs for its own.

May 20, 1961- following the flights of Gagarin and Shepard, President Kennedy tells Congress and the nation that the U.S. goal in space will be to land men on the Moon by the end of 1969

October 27, 1961-the first test launch of the Saturn 1, the progenitor of the Saturn 5. As one observer said at the time, "It *looked* like a Moon rocket."

Mid-1962-A NASA engineer, John Houbolt, comes up with the idea of LOR-lunar orbit rendezvous, as an alternative to either direct landing or Earth-orbit rendezvous. After much discussion and infighting, it is adopted as the way to go to the Moon

June 1963-The Space Committee and Congress approve NASA's plan to land on the Moon using the Apollo spacecraft, the lunar module, and the Saturn 5 rocket. Cost in 1963 dollars-$24 billion

November 22,1963-President Kennedy is shot and killed in Dallas, Texas.

January 27, 1967-the Apollo 1 capsule, with Gus Grissom, Ed White, and Roger Chaffee, catches fire while undergoing testing. All three are killed. An investigation shows mismanagement and shoddy workmanship by North American, the prime contractor. Apollo is completely redesigned and revamped

November 9, 1967-The first test launch of the Saturn 5 rocket from the Kennedy Space Center. It is a complete success(this flight is known as Apollo 4)

January 22, 1968-The lunar module is tested in space for the first time, launched by a Saturn 1B rocket(the Apollo 5 flight). It is partially successful

April 4, 1968-The second Apollo-Saturn 5 test flight(known as Apollo 6). Although not completely successful, its problems could be solved, paving the way for the next mission

October 11, 1968-Apollo 7, with Walter Schirra, Walter Cunningham, and Donn Eisele aboard, is launched on a ten day Earth orbit mission. It is completely successful.

To be continued in the next issue...

Part of a continuing series on lesser known-but still important-astronomical observatories throughout the world

The University of Maryland Observatory

The University of Maryland Observatory is one of the foremost public viewing observatories in the country. It was originally intended for serious research, but light pollution and circumstances have made it instead a popular starwatching place for people from all over the Washington, D.C. area.

The observatory was originally established in 1962 by the physics and astronomy department for research use by its professors and students, and was formally dedicated in 1964. It was located next to the UMD campus, and, in addition to observing, classes were held in the facility as well. In 1977, a second observatory building was built, which included more classrooms and a large lecture hall. By the late 1980s, even though it had been realized from the beginning that the lights of Washington, D.C. area were bright to start with, they had become even more so since the observatory's start, and academic research was largely shifted to other sites. The observatory was turned into a public viewing area, with twice a month public viewing and regular public lectures and workshops. It has become immensely popular among people in the D.C. area; one newspaper calls it one of the seven most visited places in the Capital area on Saturday nights

Originally, the observatory had two telescopes: a 20" Cassegrain reflector, and an 8" reflector. Today, several other telescopes are available for public use, including an 8" refractor, which is on loan from NASA, a 14" reflector, and a 7" reflector as well. For serious astronomical research by the UMD astronomers, the observatory has partnered with several other institutions in the Discovery Channel Telescope, a 4.3m reflector which is located as part of the Lowell Observatory complex outside Flagstaff, Arizona. Source-UMD Observatory website

From The Observer Archives-

"It's a bird, it's a plane. it's a paper bag!"

"Who would believe a runaway kite? Someone spotted something fishy in the sky. Soon everyone was looking up against the clouds and spotted it. Some got their binoculars on it and proclaimed it to be a PAPER BAG! Another person looked, and sure enough—-a paper bag! Dave Dutton put the finder scope on his Dobsonian to work and followed it. It turned out to be a runaway kite. I could see the tail flying below it and there was just enough string hanging from it to give the proper resistance to the wind to keep it flying farther and farther away. Great fun. A number of us went out for pizza after the whole thing was over. "

From the June 1989 Observer
No doubt someone probably filed a UFO report for the same day in the same area