

= Jack Parsons ( rocket engineer ) =

John Whiteside Parsons ( born Marvel Whiteside Parsons ; October 2 , 1914 ? June 17 , 1952 ) , better known as Jack Parsons , was an American rocket engineer and rocket propulsion researcher , chemist , and Thelemite occultist . Associated with the California Institute of Technology ( Caltech ) , Parsons was one of the principal founders of both the Jet Propulsion Laboratory ( JPL ) and the Aerojet Engineering Corporation . He invented the first rocket engine using a castable , composite rocket propellant , and pioneered the advancement of both liquid @-@ fuel and solid @-@ fuel rockets .

Born in Los Angeles , California , Parsons was raised by a wealthy family on Orange Grove Avenue in Pasadena . Inspired by science fiction literature , he developed an interest in rocketry in his childhood and in 1928 began amateur rocket experiments with school friend Ed Forman . He dropped out of Pasadena Junior College and Stanford University due to financial difficulties during the Great Depression , but in 1934 he united with Forman and graduate student Frank Malina to form the Caltech @-@ affiliated GALCIT Rocket Research Group , supported by Guggenheim Aeronautical Laboratory chairman Theodore von Kármán . In 1939 the GALCIT Group gained funding from the National Academy of Sciences ( NAS ) to work on Jet @-@ Assisted Take Off ( JATO ) for the U.S. military . Following American entry into World War II , in 1942 they founded Aerojet to develop and sell their JATO technology , while the GALCIT Group became JPL in 1943 .

After a brief involvement with Marxism in 1939 , Parsons converted to Thelema , the English occultist Aleister Crowley 's new religious movement . In 1941 , alongside his first wife Helen Northrup , Parsons joined the Agape Lodge , the Californian branch of the Thelemite Ordo Templi Orientis ( O.T.O. ) . At Crowley 's bidding , he replaced Wilfred Talbot Smith as its leader in 1942 and ran the Lodge from his mansion on Orange Grove Avenue . Parsons was expelled from JPL and Aerojet in 1944 due to the Lodge 's infamy and allegedly illicit activities , along with his hazardous workplace conduct . In 1945 Parsons separated from Helen after having an affair with her sister Sara ; when Sara left him for L. Ron Hubbard , he conducted the Babalon Working , a series of rituals designed to invoke the Thelemic goddess Babalon to Earth . He and Hubbard continued the procedure with Marjorie Cameron , whom Parsons married in 1946 . After Hubbard and Sara defrauded him of his life savings , Parsons resigned from the O.T.O. and went through various jobs while acting as a consultant for the Israeli rocket program . Amid the climate of McCarthyism , he was accused of espionage and left unable to work in rocketry . In 1952 , Parsons died at the age of 37 in a home laboratory explosion that attracted national media attention ; the police ruled it an accident , but many associates suspected suicide or assassination .

Parsons ' occult and libertarian polemical writings were published posthumously , with Western esoteric and countercultural circles citing him as one of the most significant figures in propagating Thelema across North America . Although academic interest in his scientific career was originally negligible , in subsequent decades historians came to recognize Parsons ' contributions to rocket engineering . For these innovations , his advocacy of space exploration and human spaceflight , and his role in the founding of JPL and Aerojet , Parsons is regarded as among the most important figures in the history of the U.S. space program . He has been the subject of several biographies and fictionalized portrayals .

= = Biography = =

= = = Early life : 1914 ? 34 = = =

Marvel Whiteside Parsons was born on October 2 , 1914 , at the Good Samaritan Hospital in Los Angeles . His parents , Ruth Virginia Whiteside ( c . 1893 ? 1952 ) and Marvel H. Parsons ( c . 1894 ? 1947 ) , had moved to California from Massachusetts the previous year , purchasing a house on Scarf Street in downtown Los Angeles . Although their son was his father 's namesake , he was known in the household as Jack . Their marriage broke down soon after Jack 's birth , when Ruth

discovered that his father had made numerous visits to a prostitute , and she filed for divorce in March 1915 . Parsons ' father returned to Massachusetts after being publicly exposed as an adulterer , with Ruth forbidding him from having any contact with Jack . Parsons ' father would later join the armed forces , reaching the rank of major , and marry a woman with whom he had a son named Charles ? a half @-@ brother whom Jack would only meet once . Although she retained her ex @-@ husband 's surname , Ruth started calling her son John ; many friends throughout his life knew him as Jack . Ruth 's parents Walter and Carrie Whiteside moved to California to be with Jack and their daughter , using their wealth to buy an up @-@ market house on Orange Grove Avenue in Pasadena ? known locally as " Millionaire 's Mile " ? where they could live together . Jack was surrounded by domestic servants . Having few friends , he lived a solitary childhood and spent much time reading ; he took a particular interest in works of mythology , Arthurian legend , and the Arabian Nights . Through the works of Jules Verne he became interested in science fiction and a keen reader of pulp magazines like *Amazing Stories* , which led to his early interest in rocketry .

At age twelve , Parsons began attending Washington Junior High School , where he performed poorly ? something biographer George Pendle attributed to undiagnosed dyslexia ? and was bullied for his upper @-@ class status and perceived effeminacy . Although unpopular , he formed a strong friendship with Edward Forman , a boy from a poor working class family who defended him from bullies and shared his interest in science fiction and rocketry , with the well @-@ read Parsons enthralled Forman with his literary prowess . In 1928 the pair ? adopting the Latin motto *per aspera ad astra* ( through hardship to the stars ) ? began engaging in homemade gunpowder @-@ based rocket experiments in the nearby Arroyo Seco canyon , as well as the Parsons family 's back garden , which left it pockmarked with craters from explosive test failures . They incorporated commonly available fireworks such as cherry bombs into their rockets , and Parsons suggested using glue as a binding agent to reduce the rocket fuel 's volatility . This research became more complex when they began using materials such as aluminium foil to enhance the castability of the gunpowder . Parsons had also begun to investigate occultism , and performed a ritual intended to invoke the Devil into his bedroom ; he worried that the invocation was successful and was frightened into ceasing these activities . In 1929 he began attending John Muir High School , where he maintained an insular friendship with Forman and was a keen participant in the sports of fencing and archery . After receiving poor school results , Parsons ' mother sent him away to study at a private boarding school in San Diego ? the Brown Military Academy for Boys ? but he was expelled for blowing up the toilets .

The Parsons family spent the summer of 1929 on a tour of Europe before returning to Pasadena , where they moved into a house on San Rafael Avenue . With the onset of the Great Depression their fortune began to dwindle , and in July 1931 Jack 's grandfather Walter died . Parsons began studying at the privately run University School , a liberal institution that took an unconventional approach to teaching . He flourished academically , becoming editor of the school 's newspaper *El Universitano* and winning an award for literary excellence , while teachers that had trained at the nearby California Institute of Technology ( Caltech ) honed his attentions on the study of chemistry . With the family 's financial difficulties deepening , Parsons began working during weekends and school holidays at the offices of the Hercules Powder Company , where he learned more about explosives and their potential use in rocket propulsion . He and Forman continued to independently explore the subject in their spare time , building and testing different rockets ? sometimes with materials that Parsons had stolen from work . Parsons soon constructed a solid @-@ fuel rocket engine , and with Forman corresponded with pioneer rocket engineers including Robert H. Goddard , Hermann Oberth and Konstantin Tsiolkovsky , and Germans Willy Ley and Wernher von Braun . Parsons and von Braun had hours of telephone conversations about rocketry in their respective countries as well as their own research .

Graduating from University School in the summer of 1933 , Parsons moved with his mother and grandmother to a more modest house on St. John Avenue , where he continued to pursue his interests in literature and poetry . In the autumn he enrolled in Pasadena Junior College with the hope of earning an associate degree in physics and chemistry , but dropped out after only a term because of his financial situation and he took up permanent employment at the Hercules Powder

Company . His employers then sent him to work at their manufacturing plant in Pinole on San Francisco Bay , where he earned a relatively high wage of \$ 100 a month ; however , he was plagued by headaches caused by exposure to nitroglycerin . He saved money in the hope of continuing his academic studies and began a degree in chemistry at Stanford University , but again found the tuition fees unaffordable and returned to Pasadena .

= = = GALCIT Rocket Research Group and the Kynette trial : 1934 ? 38 = = =

In the hope of gaining access to the state @-@ of @-@ the @-@ art resources of Caltech to use in their rocketry research , Parsons and Forman attended a lecture on the work of Austrian rocket engineer Eugen Sänger and hypothetical above @-@ stratospheric aircraft by the institute 's William Bollay ? a PhD student specializing in rocket @-@ powered aircraft ? and approached him to express their interest in designing a liquid @-@ fuel rocket motor . Bollay redirected them to another PhD student named Frank Malina , a mathematician and mechanical engineer composing a thesis on rocket propulsion who shared their interests and soon befriended the pair . Parsons , Forman , and Malina applied for funding from Caltech together ; they did not mention that their ultimate objective was to develop rockets for space exploration , realizing that most of the scientific establishment then relegated such ideas to science fiction . While Caltech 's Clark Blanchard Millikan immediately rebuffed them , Malina 's doctoral advisor Theodore von Kármán saw more promise in their proposal and agreed to allow them to operate under the auspices of the university 's Guggenheim Aeronautical Laboratory ( GALCIT ) . Naming themselves the GALCIT Rocket Research Group , they gained access to Caltech 's specialist equipment , though the economics of the Great Depression left von Kármán unable to finance them .

The trio focused their distinct skills on collaborative rocket development ; Parsons was the chemist , Forman the machinist , and Malina the technical theoretician . Malina wrote in 1968 that the self @-@ educated Parsons " lacked the discipline of a formal higher education , [ and ] had an uninhibited and fruitful imagination . " The informally trained Parsons and Forman who , as described by Geoffrey A. Landis , " were eager to try whatever idea happened to spring to mind " , contrasted with the approach of Malina , who insisted on the need for scientific discipline as informed by von Kármán . Landis writes that their creativity , however , " kept Malina focused toward building actual rocket engines , not just solving equations on paper " . Sharing socialist values , they operated on an egalitarian basis ; Malina taught the others about scientific procedure and they taught him about the practical elements of rocketry . They often socialized , smoking marijuana and drinking , while Malina and Parsons set about writing a semiautobiographical science fiction screenplay they planned to pitch to Hollywood with strong anti @-@ capitalist and pacifist themes .

Parsons had met Helen Northup at a local church dance and proposed marriage in July 1934 . She accepted and they were married in April 1935 at the Little Church of the Flowers in Forest Lane Memorial Park , Glendale , before undertaking a brief honeymoon in San Diego . They moved into a house on South Terrace Drive , Pasadena , while Parsons gained employment for the explosives manufacturer Halifax Powder Company at their facility in Saugus . Much to Helen 's dismay , Parsons spent most of his wages funding the GALCIT Rocket Research Group . For extra money he manufactured nitroglycerin in their home , constructing a home laboratory on their front porch , and at one point he pawned Helen 's engagement ring and would often ask her family for loans .

Malina recounted that " Parsons and Forman were not too pleased with an austere program that did not include at least the launching of model rockets " , but the Group reached the consensus of developing a working static rocket @-@ motor before embarking on more complex research . They contacted liquid @-@ fuel rocket pioneer Robert H. Goddard and he invited Malina to his facility in Roswell , New Mexico , but he was not interested in cooperating ? reticent about sharing his research and having been subjected to widespread derision for his work in rocketry . They were instead joined by Caltech graduate students Apollo M. O. " Amo " Smith , Carlos C. Wood , Mark Muir Mills , Fred S. Miller , William C. Rockefeller , and Rudolph Schott ; Schott was relied upon for the use of his pickup truck to transport equipment . Their first liquid @-@ fuel motor test took place near the Devil 's Gate Dam in the Arroyo Seco on Halloween 1936 . Parsons ' biographer John

Carter described the layout of the contraption as showing

oxygen flowing from one side , with methyl alcohol ( the fuel ) and nitrogen flowing from the other side . Water cooled the rocket during the burn . Thrust pulled down a spring which measured force . The deflection of the spring measured the force applied to it . A small diamond tip on the apparatus scratched a glass plate to mark the furthest point of deflection . The rocket and mount were protected by sandbags , with the tanks ( and the experimenters ) well away from it .

Three attempts to fire the rocket failed ; on the fourth the oxygen line was accidentally ignited and perilously billowed fire at the Group , but they viewed this experience as formative . They continued their experiments throughout the final quarter of 1936 ; after the final test was successfully completed in January 1937 von Kármán agreed that they could perform their future experiments at an exclusive rocket testing facility on campus .

In April 1937 Caltech mathematician Qian Xuesen ( a Chinese citizen ) joined the Group . Several months later Weld Arnold , a Caltech laboratory assistant who worked as the Group 's official photographer , also joined . The main reason for Arnold 's appointment to this position was his provision of a donation to the Group on behalf of an anonymous benefactor whose identity was never revealed . They became well known on campus , earning the moniker of the " Suicide Squad " for the dangerous nature of some of their experiments and attracting attention from the local press . Parsons himself gained further media publicity when he appeared as an expert explosives witness in the trial of Captain Earl Kynette , the head of police intelligence in Los Angeles who was accused of conspiring to set a car bomb in the attempted murder of private investigator Harry Raymond , a former LAPD detective who was fired after whistleblowing against police corruption . When Kynette was convicted largely on Parsons ' testimony , which included his forensic reconstruction of the car bomb and its explosion , his identity as an expert scientist in the public eye was established despite his lack of a university education . While working at Caltech , Parsons was admitted to evening courses in chemistry at the University of Southern California ( USC ) , but distracted by his GALCIT workload he attended sporadically and received unexceptional grades .

By early 1938 the Group had made their static rocket motor , which originally burned for three seconds , run for over a minute . In May that year , Parsons was invited by Forrest J Ackerman to lecture on his rocketry work at Chapter Number 4 of the Los Angeles Science Fiction League ( LASFL ) . Although he never joined the society , he occasionally attended their talks , on one occasion conversing with a teenage Ray Bradbury . Another scientist to become involved in the GALCIT project was Sidney Weinbaum , a Jewish refugee from Europe who was a vocal Marxist ; he led Parsons , Malina , and Qian in their creation of a largely secretive communist discussion group at Caltech , which became known as Professional Unit 122 of the Pasadena Communist Party . Although Parsons subscribed to the People 's Daily World and joined the American Civil Liberties Union ( ACLU ) , he refused to join the American Communist Party , causing a break in his and Weinbaum 's friendship . This coupled with the need to focus on paid employment led to the disintegration of much of the Rocket Research Group , leaving only its three founding members by late 1938 .

= = = Embracing Thelema ; advancing JATO and foundation of Aerojet : 1939 ? 42 = = =

In January 1939 John and Frances Baxter , a brother and sister who had befriended Jack and Helen Parsons , took Jack to the Church of Thelema in Winona Boulevard , Hollywood , where he witnessed the performance of The Gnostic Mass . Notable attendees of the church had included Hollywood actor John Carradine and gay rights activist Harry Hay . Parsons was intrigued , having already heard of Thelema 's founder and Outer Head of the Ordo Templi Orientis ( O.T.O. ) , Aleister Crowley , after reading a copy of Crowley 's text *Konx om Pax* ( 1907 ) .

Parsons was introduced to leading members Regina Kahl , Jane Wolfe , and Wilfred Talbot Smith at the mass . Feeling both " repulsion and attraction " for Smith , Parsons continued to sporadically attend the Church 's events for a year . He continued to read Crowley 's works , which increasingly interested him , and encouraged Helen to read them . Parsons came to believe in the reality of magic ? or magick in Thelemic terms ? as a force that could be explained through quantum physics .

He tried to interest his friends and acquaintances in Thelema , taking science fiction writers Jack Williamson and Cleve Cartmill to a performance of The Gnostic Mass . Although they were unimpressed , Parsons was more successful with Grady Louis McMurtry , a young Caltech student whom he had befriended , as well as McMurtry 's fiancée Claire Palmer , and Helen 's sister Sara " Betty " Northrup .

Jack and Helen were initiated into the Agape Lodge , the renamed Church of Thelema , in February 1941 . Parsons adopted the Thelemic motto of Thelema Obtenteum Proedero Amoris Nuptiae , a Latin mistranslation of " The establishment of Thelema through the rituals of love " . The initials of this motto spelled out T.O.P.A.N. , also serving as the declaration " To Pan " . Commenting on Parsons ' errors of translation , in jest Crowley said that " the motto which you mention is couched in a language beyond my powers of understanding " . Parsons also adopted the Thelemic title Frater T.O.P.A.N ? with T.O.P.A.N represented in Kabbalistic numerology as 210 ? the name with which he frequently signed letters to occult associates ? while Helen became known as Soror Grimaud . Smith wrote to Crowley claiming that Parsons was " a really excellent man ... He has an excellent mind and much better intellect than myself ... JP is going to be very valuable " . Wolfe wrote to German O.T.O. representative Karl Germer that Parsons was " an A1 man ... Crowleysque in attainment as a matter of fact " , and mooted Parsons as a potential successor to Crowley himself as Outer Head of the Order . Crowley concurred with such assessments , informing Smith that Parsons " is the most valued member of the whole Order , with no exception ! "

At von Kármán 's suggestion , Malina approached the National Academy of Sciences ( NAS ) Committee on Army Air Corps Research to request funding for research into what they referred to as " jet propulsion " , a term chosen to avoid the stigma attached to rocketry . The military were interested in jet propulsion as a means of getting aircraft quickly airborne where there was insufficient room for a full @-@ length runway , and gave the Rocket Research Group \$ 1 @, @ 000 to put together a proposal on the feasibility of Jet @-@ Assisted Take Off ( JATO ) by June 1939 , making Parsons et al. the first U.S. government @-@ sanctioned rocket research group . Since their formation in 1934 , they had also performed experiments involving model , black powder motor @-@ propelled multistage rockets . In a research paper submitted to the American Institute of Aeronautics and Astronautics ( AIAA ) , Parsons reported these rockets reaching velocities of 4 @, @ 875 miles per hour , thereby demonstrating the potential of solid fuels as being significantly more effective than liquid types primarily preferred by researchers such as Goddard . In light of this progress , Caltech and the GALCIT Group received an additional \$ 10 @, @ 000 rocketry research grant from the AIAA .

Although a quarter of their funding went on repairing damage to Caltech buildings caused by their experiments , in June 1940 they submitted a report to the NAS in which they showed the feasibility of the project for the development of JATO and requested \$ 100 @, @ 000 to continue ; however , they only received \$ 22 @, @ 000 . Now known as GALCIT Project Number 1 , they continued to be ostracized by other Caltech scientists who grew increasingly irritated by their accidents and noise pollution , and were made to relocate their experiments back to the Arroyo Seco , at a site with unventilated , corrugated iron sheds that served as both research facilities and administrative offices . It was here that JPL would be founded . Parsons and Forman 's rocket experiments were the cover story of the August 1940 edition of Popular Mechanics , in which the pair discussed the prospect of rockets being able to ascend above Earth 's atmosphere and orbit around it for research purposes , as well as reaching the Moon .

For the JATO project , they were joined by Caltech mathematician Martin Summerfield and 18 workers supplied by the Works Progress Administration . Former colleagues like Qian were prevented from returning to the project by the Federal Bureau of Investigation ( FBI ) , who ensured the secrecy of the operation and restricted the involvement of foreign nationals and political extremists . The FBI was satisfied that Parsons was not a Marxist but were concerned when Thelemite friend Paul Seckler used Parsons ' gun in a drunken car hijacking , for which Seckler was imprisoned in San Quentin State Prison for two years . Englishman George Emerson replaced Arnold as the Group 's official photographer .

The Group 's aim was to find a replacement for black @-@ powder rocket motors ? units consisting

of charcoal , sulphur and potassium nitrate with dextrin as a binding agent ? the volatility of which frequently resulted in explosions damaging military aircraft . The solid JATO fuel invented by Parsons consisted of amide , corn starch , and ammonium nitrate bound together in the JATO unit with glue and blotting paper . It was codenamed GALCIT @-@ 27 , implying the previous invention of 26 new fuels . The first JATO tests using an Ercoupe plane took place in late July 1941 ; though effectively aiding propulsion , the units frequently exploded and damaged the aircraft . Parsons theorized that this was because the ammonium nitrate became dangerously combustible following overnight storage , during which temperature and consistency changes had resulted in a chemical imbalance . Parsons and Malina accordingly devised a method in which they would fill the JATOs with the fuel in the early mornings shortly before the tests , enduring sleep deprivation to do so . On August 21 , 1941 , Navy Captain Homer J. Boushey , Jr . ? watched by such figures as Clark Millikan and William F. Durand ? piloted the JATO @-@ equipped Ercoupe at the March Air Force Base in Moreno Valley , California . It proved a success and reduced takeoff distance by 30 % , but one of the JATOs partially exploded . Over the following weeks 62 further tests took place , and the NAS increased their grant to \$ 125 @, @ 000 . During a series of static experiments , an exploding JATO did significant damage to the fuselage in the Ercoupe 's tail ; one observer optimistically noted that " at least it wasn 't a big hole " , but necessary repairs delayed their efforts .

The military ordered a flight test using liquid fuel rather than the pre @-@ existing solid fuel in early 1942 . Upon the United States ' entry into the Second World War in December 1941 , the Group realized they could be drafted directly into military service if they failed to provide viable JATO technology for the military . Informed by their left @-@ wing politics , aiding the war effort against Nazi Germany and the Axis powers was as much of a moral vocation to Parsons , Forman and Malina as it was a practical one . Parsons , Summerfield and the GALCIT workers focused on the task and found success with a combination of gasoline with red fuming nitric acid as its oxidizer ? with the latter , suggested by Parsons , proving to be an effective substitute for liquid oxygen . The testing of this fuel resulted in another calamity , however , when the testing rocket motor exploded ; the fire , containing iron shed fragments and shrapnel inexplicably left the experimenters unscathed . Malina solved the problem by replacing the gasoline with aniline , resulting in a successful test launch of a JATO @-@ equipped A @-@ 20A plane at the Muro Auxiliary Air Field in the Mojave Desert . Providing a thrust five times more powerful than GALCIT @-@ 27 , and again reducing takeoff distance by 30 % , Malina wrote to his parents that " We now have something that really works and we should be able to help give the Fascists hell ! "

The Group then agreed to produce and sell 60 JATO engines to the United States Army Air Corps . To do so they formed the Aerojet Engineering Corporation in March 1942 , into which Parsons , Forman , Malina , von Kármán , and Summerfield each invested \$ 250 , opening their offices on Colorado Boulevard and bringing in Amo Smith as their engineer . Andrew G. Haley was recruited by von Kármán as their lawyer and treasurer . Although Aerojet was a for @-@ profit operation that provided technology for military means , the founders ' mentality was rooted in the ideal of using rockets for peaceful space exploration . As Haley recounted von Kármán requesting : " we will make the rockets ? you must make the corporation and obtain the money . Later on you will have to see that we all behave well in outer space . "

Despite these successes , Parsons ? project engineer of Aerojet 's Solid Fuel Department ? remained motivated to address the malfunctions observed during the Ercoupe tests . In June 1942 ? assisted by Mills and Miller ? he focused his attention on developing an effective method of restricted burning when using solid rocket fuel , as the military demanded JATOs that could provide over 100 pounds of thrust without any risk of exploding . Although solid fuels such as GALCIT @-@ 27 were less volatile than their liquid counterparts , they were disfavored for military JATO use as they provided less immediate thrust and did not have the versatility of being turned on and off mid @-@ flight . Parsons tried to resolve GALCIT @-@ 27 's volatility issue with GACIT @-@ 46 , which replaced the former 's ammonium nitrate with guanidine nitrate . To avoid the problems seen with ammonium nitrate , he had GALCIT @-@ 46 supercooled and then superheated prior to testing . When it failed the test , he realized that the fuel 's binding black powders rather than the oxidizers which had resulted in their volatility , and in June that year had the idea of using liquidized asphalt

as an appropriate binding agent with potassium perchlorate as its oxidizer .

Malina recounted that Parsons was inspired to use asphalt by the ancient incendiary weapon Greek fire , while in a 1982 talk for the International Association of Astronomical Artists Captain Boushey stated that Parsons experienced an epiphany after watching manual workers using molten asphalt to fix tiles onto a roof . Known as GALCIT @-@ 53 , this fuel proved to be significantly less volatile than the Group 's earlier concoctions , fulfilling Parsons ' aim of creating a restricted @-@ burn rocket fuel inside a castable container , and providing a thrust 427 % more powerful than that of GALCIT @-@ 27 . This set a precedent which according to his biographer John Carter " changed the future of rocket technology " : the thermoplastic asphalt casting ? durable in all climates ? allowing for mass @-@ production and indefinite storage of the Group 's invention and transforming solid @-@ fuel agents into a safe and viable form of rocket propulsion . Plasticized variants of Parsons ' solid @-@ fuel design ? invented by JPL 's Charles Bartley ? were later used by NASA in Space Shuttle Solid Rocket Boosters and by the Strategic Air Command in Polaris , Poseidon and Minuteman intercontinental ballistic missiles .

= = = Foundation of JPL and leading the Agape Lodge : 1942 ? 44 = = =

Aerojet 's first two contracts were from the U.S. Navy ; the Bureau of Aeronautics requested a solid @-@ fuel JATO and the Wilbur Wright Field requested a liquid @-@ fuel unit . The Air Corps had requested two thousand JATOs from Aerojet by late 1943 , committing \$ 256 @,@ 000 toward Parsons ' solid @-@ fuel type . Despite this drastically increased turnover , the company continued to operate informally and remained intertwined with the GALCIT project . Caltech astronomer Fritz Zwicky was brought in as head of the company 's research department , and Haley replaced von Kármán as Aerojet chairman and imposed payroll cuts instead of reducing JATO output ; the alternative was to cut staff numbers while maintaining more generous salaries , but Haley 's priority was Aerojet 's contribution to the war effort . However , company heads including Parsons were exempted from this austerity , drawing the ire of many personnel .

Parsons ' newfound credentials and financial security gave him the opportunity to travel more widely throughout the U.S. as an ambassador for Aerojet , meeting with other rocket enthusiasts . In New York he met with Karl Germer , the head of the O.T.O. in North America and in Washington , D.C. he met Poet Laureate Joseph Auslander , donating some of Crowley 's poetry books to the Library of Congress . He also became a regular at the Mañana Literary Society , which met in Laurel Canyon at the home of Parsons ' friend Robert A. Heinlein and included science fiction writers including Cleve Cartmill , Jack Williamson , and Anthony Boucher . Among Parsons ' favorite works of fiction was Williamson 's Darker Than You Think , a novelette published in the fantasy magazine Unknown in 1940 , which inspired his later occult workings . Boucher used Parsons as a partial basis for the character of Hugo Chantrelle in his murder mystery Rocket to the Morgue ( 1942 ) .

Helen went away for a period in June 1941 , during which Parsons , encouraged to do so by the sexually permissive attitude of the O.T.O. , began a sexual relationship with her 17 @-@ year @-@ old sister , Sara . Upon Helen 's return , Sara asserted that she was Parsons ' new wife , and Parsons himself admitted that he found Sara more sexually attractive than Helen . Conflicted in her feelings , Helen sought comfort in Smith and began a relationship with him that would last for the rest of his life ; the four remained friends . The two couples , along with a number of other Thelemites ( some of whom with their children ) , relocated to 1003 South Orange Grove Avenue , an American Craftsman @-@ style mansion . They all contributed to the rent of \$ 100 a month and lived communally in what replaced Winona Boulevard as the new base of the Agape Lodge , maintaining an allotment and slaughtering their own livestock for meat as well as blood rituals . Parsons decorated his new room with a copy of the Stele of Revealing , a statue of Pan , and his collection of swords and daggers . He converted the garage and laundry room into a chemical laboratory and often held science fiction discussion meetings in the kitchen , and entertained the children with hunts for fairies in the 25 acre garden .

Although there were arguments among the commune members , Parsons remained dedicated to Thelema . He gave almost all of his salary to the O.T.O. while actively seeking out new members ?

including Forman ? and financially supported Crowley in London through Germer . Parsons ' enthusiasm for the Lodge quickly began to impact on his professional life . He frequently appeared at Aerojet hungover and sleep deprived from late nights of Lodge activities , and invited many of his colleagues to them , drawing the ire of staff who previously tolerated Parsons ' occultism as harmless eccentricity ; known to von Kármán as a " delightful screwball " , he was frequently observed reciting Crowley 's poem " Hymn to Pan " in an ecstatic manner compared to the preaching of Billy Graham during rocket tests ? and on request at parties to their great amusement . However , they disapproved of his hesitancy to separate his vocations ; Parsons became more rigorously engaged in Aerojet 's day @-@ to @-@ day business in an effort to resolve this weariness , but the Agape Lodge soon came under investigation by both the Pasadena Police Department and the FBI . Both had received allegations of a " black magic cult " involved in sexual orgies ; one complainant was a 16 @-@ year @-@ old boy who claimed that he was raped by lodge members , while neighbors reported a ritual involving a naked pregnant woman jumping through fire . After Parsons explained that the Lodge was simply " an organization dedicated to religious and philosophical speculation " , neither agency found evidence of illegal activity and came to the conclusion that the Lodge constituted no threat to national security . Having been a long @-@ term heavy @-@ user of alcohol and marijuana , Parsons now habitually used cocaine , amphetamines , peyote , mescaline and opiates as well . He continued to have sexual relations with multiple women , including McMurtry 's fiancée Claire . When Parsons paid for Claire to have an abortion , McMurtry was angered and their friendship broke down .

Crowley and Germer wanted to see Smith removed as head of the Agape Lodge , believing that he had become a bad influence on its members . Parsons and Helen wrote to them to defend their mentor but Germer nevertheless ordered him to stand down and Parsons was appointed as temporary head of the Lodge . Some veteran Lodge members disliked Parsons ' influence , concerned that it encouraged excessive sexual polyandry that was religiously detrimental , but his charismatic orations at Lodge meetings assured his popularity among the majority of followers . Parsons soon created the Thelemite journal *Oriflamme* , in which he published his own poetry , but Crowley was unimpressed ? particularly due to Parsons ' descriptions of drug use ? and the project was soon shelved . Helen gave birth to Smith 's son in April ; the child was named Kwen Lanval Parsons . Smith and Helen left with Kwen for a two @-@ room cabin in Rainbow Valley in May . Concurrently in England , Crowley undertook an astrological analysis of Smith 's birth chart and came to the conclusion that Smith was the incarnation of a god , greatly altering his estimation of him . Smith remained skeptical as Crowley 's analysis was seemingly deliberately devised in Parsons ' favor , encouraging Smith to step down from his role in the Agape Lodge and instructing him to take a meditative retreat . Refusing to take orders from Germer anymore , Smith resigned from the O.T.O. Parsons ? who remained sympathetic and friendly to Smith during the conflict and was weary of Crowley 's " appalling egotism , bad taste , bad judgement , and pedanticism " ? ceased lodge activities and resigned as its head , but withdrew his resignation after receiving a pacifying letter from Crowley .

By the summer of 1943 Aerojet was operating on a budget of \$ 650 @,@ 000 . The same year Parsons and von Kármán traveled to Norfolk , Virginia to consult on a new JATO contract for the U.S. Navy on the invitation of Secretary of the Navy Frank Knox . Though JATOs were being mass @-@ produced for military applications , JATO @-@ propelled aircraft could not " keep up " with larger , bomber planes taking off from long aircraft carrier runways ? which made Aerojet 's industry at risk of becoming defunct . Parsons demonstrated the efficacy of the newer JATOs to solve this issue by equipping a Grumman plane with solid @-@ fuel units ; its assisted takeoff from the USS *Charger* was successful , but produced smoke containing a noxious , yellow @-@ colored residue . The Navy guaranteed Parsons a contract on the condition that this residue was removed ; this led to the invention of Aeroplex , a technology for smokeless vapor trails developed at Aerojet by Parsons .

As the U.S. became aware that Nazi Germany had developed the V @-@ 2 rocket , the military ? following recommendations from von Kármán based upon research using British intelligence ? placed a renewed impetus on its own rocket research , reinstating Qian to the GALCIT project .



They gave the Group a \$ 3 million grant to develop rocket @-@ based weapons , and the Group was expanded and renamed the Jet Propulsion Laboratory ( JPL ) . By this point the Navy were ordering 20 @,@ 000 JATOs a month from Aerojet , and in December 1944 Haley negotiated for the company to sell 51 % of its stock to the General Tire and Rubber Company to cope with the increased demand . However , Aerojet 's Caltech @-@ linked employees ? including Zwicky , Malina and Summerfield ? would only agree to the sale on the condition that Parsons and Forman were removed from the company , viewing their occult activities as disreputable . JPL historian Erik M. Conway also attributes Parsons ' expulsion to more practical concerns : he " still wanted to work in the same way as he 'd done in his backyard , instinctive and without regard for safety " . Parsons and Forman were unfazed , informing Haley of their prediction that the rocket industry would become obsolete in the postwar age and seeing more financial incentive in starting a chain of laundromats . Haley persuaded them to sell their stock , resulting in Parsons leaving the company with \$ 11 @,@ 000 . With this money he bought the lease to 1003 , which had come to be known as " the Parsonage " after him .

= = = L. Ron Hubbard and the Babalon Working : 1945 ? 46 = = =

Now disassociated from JPL and Aerojet , Parsons and Forman founded the Ad Astra Engineering Company , under which Parsons founded the chemical manufacturing Vulcan Powder Company . Ad Astra was subject to an FBI investigation under suspicion of espionage when security agents from the Manhattan Project discovered that Parsons and Forman had procured a chemical used in a top secret project for a material known only as x @-@ metal , but they were later acquitted of any wrongdoing . Parsons continued to financially support Smith and Helen , although he asked for a divorce from her and ignored Crowley 's commands by welcoming Smith back to the Parsonage when his retreat was finished . Parsons continued to hold O.T.O. activities at the Parsonage but began renting rooms at the house to non @-@ Thelemites , including journalist Nieson Himmel , Manhattan Project physicist Robert Cornog , and science fiction artist Louis Goldstone . Parsons attracted controversy in Pasadena for his preferred clientele . Parsonage resident Alva Rogers recalled in a 1962 article for an occultist fanzine : " In the ads placed in the local paper Jack specified that only bohemians , artists , musicians , atheists , anarchists , or any other exotic types need to apply for rooms ? any mundane soul would be unceremoniously rejected " .

Science fiction writer and U.S. Navy officer L. Ron Hubbard soon moved in to the Parsonage ; he and Parsons became close friends . Parsons wrote to Crowley that although Hubbard had " no formal training in Magick he has an extraordinary amount of experience and understanding in the field . From some of his experiences I deduce he is direct touch with some higher intelligence , possibly his Guardian Angel . ... He is the most Thelemic person I have ever met and is in complete accord with our own principles . "

Although Parsons and Sara were in an open relationship encouraged by the O.T.O. ' s polyandrous sexual ethics , she became enamored with Hubbard ; Parsons , despite attempting to repress his passions , became intensely jealous . Motivated to find a new partner through occult means , Parsons began to devote his energies to conducting black magic , causing concern among fellow O.T.O. members who believed that it was invoking troublesome spirits into the Parsonage ; Jane Wolfe wrote to Crowley that " our own Jack is enamored with Witchcraft , the hounfort , voodoo . From the start he always wanted to evoke something ? no matter what , I am inclined to think , as long as he got a result . " He claimed to the residents that he was imbuing statues in the house with a magical energy in order to sell them to fellow occultists . Parsons reported paranormal events in the house resulting from the rituals ; including poltergeist activity , sightings of orbs and ghostly apparitions , alchemical ( sylphic ) effect on the weather , and disembodied voices . Pendle suggested that Parsons was particularly susceptible to these interpretations and attributed the voices to a prank by Hubbard and Sara . One ritual allegedly brought screaming banshees to the windows of the Parsonage , an incident that disturbed Forman for the rest of his life . In December 1945 Parsons began a series of rituals based on Enochian magic during which he masturbated onto magical tablets , accompanied by Sergei Prokofiev 's Second Violin Concerto and using his own

semen and blood for this purpose . Describing this magical operation as the Babalon Working , he hoped to bring about the incarnation of Thelemite goddess Babalon onto Earth . He allowed Hubbard to take part as his " scribe " , believing that he was particularly sensitive to detecting magical phenomena . As described by Richard Metzger , " Parsons jerked off in the name of spiritual advancement " while Hubbard " scanned the astral plane for signs and visions . "

Their final ritual took place in the Mojave Desert in late February 1946 , during which Parsons abruptly decided that his undertaking was complete . On returning to the Parsonage he discovered that a woman named Marjorie Cameron ? an unemployed illustrator and former Navy WAVE ? had come to visit . Believing her to be the " elemental " woman and manifestation of Babalon that he had invoked , in early March Parsons began performing sex magic rituals with Cameron , who acted as his " Scarlet Woman " , while Hubbard continued to participate as the amanuensis . Unlike the rest of the household , Cameron knew nothing at first of Parsons ' magical intentions : " I didn 't know anything about the O.T.O. , I didn 't know that they had invoked me , I didn 't know anything , but the whole house knew it . Everybody was watching to see what was going on . " Despite this ignorance and her skepticism about Parsons ' magic , Cameron reported her sighting of a UFO to Parsons , who secretly recorded the sighting as a materialization of Babalon .

Inspired by Crowley 's novel Moonchild ( 1917 ) , Parsons and Hubbard aimed to magically fertilize a " magical child " through immaculate conception , which when born to a woman somewhere on Earth nine months following the working 's completion would become the Thelemic messiah embodying Babalon . To quote Metzger , the purpose of the Babalon Working was " a daring attempt to shatter the boundaries of space and time " facilitating , according to Parsons , the emergence of Thelema 's Æon of Horus . When Cameron departed for a trip to New York , Parsons retreated to the desert , where he believed that a preternatural entity psychographically provided him with Liber 49 , which represented a fourth part of Crowley 's The Book of the Law , the primary sacred text of Thelema , as well as part of a new sacred text he called the Book of Babalon . Crowley was bewildered and concerned by the endeavor , complaining to Germer of being " fairly frantic when I contemplate the idiocy of these louts ! " Believing the Babalon Working was accomplished , Parsons sold the Parsonage to developers for \$ 25 @, @ 000 under the condition that he and Cameron could continue to live in the coach house , and he appointed Roy Leffingwell to head the Agape Lodge , which would now have to meet elsewhere for its rituals .

Parsons decided to co @-@ found a company called Allied Enterprises with Hubbard and Sara , into which Parsons invested his life savings of \$ 20 @, @ 970 . Hubbard suggested that with this money they travel to Miami to purchase three yachts , which they would then sail through the Panama Canal to the West Coast , where they could sell them on for a profit . Parsons agreed , but many of his friends thought it was a bad idea . Hubbard had secretly requested permission from the U.S. Navy to sail to China and South and Central America on a mission to " collect writing material " ; his real plans were for a world cruise . Left " flat broke " by this defrauding , Parsons was incensed when he discovered that Hubbard and Sara had left for Miami with \$ 10 @, @ 000 of the money ; he suspected a scam but was placated by a telephone call from Hubbard and agreed to remain business partners . When Crowley , in a telegram to Germer , dismissed Parsons as a " weak fool " and victim to Hubbard and Sara 's obvious confidence trick , Parsons changed his mind , flew to Miami and placed a temporary injunction and restraining order on them . Upon tracking them down to a harbor in County Causeway , Parsons discovered that the couple had purchased three yachts as planned ; they tried to flee aboard one but hit a squall and were forced to return to port . Parsons was convinced that he had brought them to shore through a lesser banishing ritual of the pentagram containing an astrological , geomantic invocation of Bartzabel ? a vengeful spirit of Mars . Allied Enterprises was dissolved and in a court settlement Hubbard was made to promise to reimburse Parsons . Parsons was discouraged from taking further action by Sara , who threatened to report him for statutory rape since their sexual relationship took place when she was under California 's age of consent of 18 . Parsons was ultimately compensated with only \$ 2 @, @ 900 . Hubbard , already married to Margaret Grubb , bigamously married Sara and went on to found Dianetics and Scientology .

The Sunday Times published an article about Hubbard 's involvement with the O.T.O. and Parsons '

occult activities in December 1969 . In response , the Church of Scientology released an unsubstantiated press statement which said that Hubbard had been sent as an undercover agent by the U.S. Navy to intercept and destroy Parsons ' " black magic cult " , and save Sara from its influence . The Church also claimed that Robert A. Heinlein was the clandestine Navy operative who " sent in " Hubbard to undertake this operation . Returning to California , Parsons completed the sale of the Parsonage , which was then demolished , and resigned from the O.T.O. He wrote in his letter to Crowley that he did not believe that " as an autocratic organization , [ the O.T.O. ] constitutes a true and proper medium for the expression and attainment " of Thelema .

= = = Work for Israelis and espionage accusations : 1946 ? 52 = = =

Parsons was employed by North American Aviation at Inglewood , where he worked on the Navaho Missile Program . He and Cameron moved into a house in Manhattan Beach , where he instructed her in occultism and esotericism . When Cameron developed catalepsy , Parsons referred her to Sylvan Muldoon 's books on astral projection , suggesting that she could manipulate her seizures to accomplish it . They were married on October 19 , 1946 , four days after his divorce from Helen was finalized , with Forman as their witness . Parsons continued to be seen as a specialist in rocketry ; he acted as an expert consultant in numerous industrial tribunals and police and Army Ordnance investigations regarding explosions . In May 1947 , Parsons gave a talk at the Pacific Rocket Society in which he predicted that rockets would take humans to the Moon . Although he had become distant from the now largely defunct O.T.O. and had sold much of his Crowleyn library , he continued to correspond with Crowley until the latter 's death in December 1947 .

At the emergence of the Cold War , a Red Scare developed in the U.S. as the Congressional House Un @-@ American Activities Committee began investigating and obstructing the careers of people with perceived communist sympathies . Many of Parsons ' former colleagues lost their security clearances and jobs as a result , and eventually the FBI stripped Parsons of his clearance because of his " subversive " character , including his involvement in and advocacy of " sexual perversion " in the O.T.O. He speculated in a June 1949 letter to Germer that his clearance was revoked in response to his public dissemination of Crowley 's Liber OZ , a 1941 tract summarizing the individualist moral principles of Thelema . Declassified FBI documents would reveal that the FBI 's primary concern was Parsons ' former connections to Marxists at Caltech and his membership of the also " subversive " ACLU . When they interviewed Parsons he denied communist sympathies but informed them of Sidney Weinbaum 's " extreme communist views " and Frank Malina 's involvement in Weinbaum 's communist cell at Caltech , which resulted in Weinbaum 's arrest for perjury since he had lied under oath by denying any involvement in communist groups . Malina 's security clearance was withdrawn as well . In reaction to this hostile treatment , Parsons sought work in the rocket industry abroad . He sought advice to do so in correspondence with von Kármán ; whose advice he followed by enrolling in an evening course in advanced mathematics at USC to bolster his employability in the field ? but again he neglected attendance and failed the course . Parsons again resorted to bootlegging nitroglycerin for money , and managed to earn a wage as a car mechanic , a manual laborer at a gas station , and a hospital orderly ; for two years he was also a faculty member at the USC Department of Pharmacology . Relations between Parsons and Cameron became strained ; they agreed to a temporary separation and she moved to Mexico to join an artists ' commune in San Miguel de Allende .

Unable to pursue his scientific career , without his wife and devoid of friendship , Parsons decided to return to occultism and embarked on sexually based magical operations with prostitutes . He was intent , informally following the ritualistic practice of Thelemite organization the A ? A ? , on performing " the Crossing of the Abyss " , attaining union with the universal consciousness , or " All " as understood in Thelemic mysticism , and becoming the " Master of the Temple " . Following his apparent success in doing so , Parsons recounted having an out @-@ of @-@ body experience invoked by Babalon , who astrally transported him to the biblical City of Chorazin , an experience he referred to as a " Black Pilgrimage " . Accompanying Parsons ' " Oath of the Abyss " was his own " Oath of the AntiChrist " , which was witnessed by Wilfred Talbot Smith . In this oath , Parsons

professed to embody an entity named Belarion Armillus Al Dajjal , the Antichrist " who am come [ sic ] to fulfill the law of the Beast 666 [ Aleister Crowley ] " . Viewing these oaths as the completion of the Babalon Working , Parsons wrote an illeist autobiography titled Analysis by a Master of the Temple and an occult text titled The Book of AntiChrist . In the latter work , Parsons ( writing as Belarion ) prophesied within nine years Babalon would manifest on Earth and supersede the dominance of the Abrahamic religions .

During this period , Parsons also wrote an essay on his individualist philosophy and politics ? which he described as standing for " liberalism and liberal principles " ? titled " Freedom is a Two @-@ Edged Sword " , in which he condemned the authoritarianism , censorship , corruption , antisexualism and racism he saw as prevalent in American society . None of these works were published in his lifetime . Through Heinlein , Parsons received a visit from writer L. Sprague de Camp , with whom he discussed magic and science fiction , and disclosed that Hubbard had sent a letter offering him Sara back . De Camp later referred to Parsons as " An authentic mad genius if I ever met one " , and based the character Courtney James on him in his time travel story A Gun for Dinosaur ( 1956 ) . Parsons was also visited by Jane Wolfe , who unsuccessfully appealed for him to rejoin the dilapidated O.T.O. He entered a brief relationship with an Irishwoman named Gladis Gohan ; they moved to a house on Redondo Beach , a building known by them as the " Concrete Castle " . Cameron returned to Redondo Beach from San Miguel de Allende and violently argued with Parsons upon discovering his infidelity , before she again left for Mexico . Parsons responded by initiating divorce proceedings against her on the grounds of " extreme cruelty " .

Parsons testified to a closed federal court that the moral philosophy of Thelema was both anti @-@ fascist and anti @-@ communist , emphasizing his belief in individualism . This along with references from his scientific colleagues resulted in his security clearance being reinstated by the Industrial Employment Review Board , which ruled that there was insufficient evidence that he had ever had communist sympathies . This allowed Parsons to obtain a contract in designing and constructing a chemical plant for the Hughes Aircraft Company in Culver City . Von Kármán put Parsons in touch with Herbert T. Rosenfeld , President of the Southern Californian chapter of the American Technion Society ? a Zionist group dedicated to supporting the newly created State of Israel . Rosenfeld offered Parsons a job with the Israeli rocket program and hired him to produce technical reports for them . In November 1950 , as the Red Scare intensified , Parsons decided to migrate to Israel to pursue Rosenfeld 's offer , but a Hughes secretary whom Parsons had asked to type up a portfolio of technical documents reported him to the FBI . She accused Parsons of espionage and attempted theft of classified company documents on the basis of some of the reports that he had sought to submit to the Technion Society .

Parsons was immediately fired from Hughes ; the FBI investigated the complaint and were suspicious that Parsons was spying for the Israeli government . Parsons denied the allegations when interrogated ; he insisted that his intentions were peaceful and had suffered an error of judgment in procurement of the documents . Some of Parsons ' scientific colleagues rallied to his defense , but the case against him worsened when the FBI investigated Rosenfeld for being linked to Soviet agents , and more accounts of his occult and sexually permissive activities at the Parsonage came to light . In October 1951 the U.S. attorney decided that because the contents of the reports did not constitute state secrets , Parsons was not guilty of espionage .

The Review Board , however , still considered Parsons a liability because of his historical Marxist affiliations and investigations by the FBI , and in January 1952 they permanently reinstated their ban on him working for classified projects , effectively prohibiting him from working in rocketry . To make a living he founded the Parsons Chemical Manufacturing Company , which was based in North Hollywood and created pyrotechnics and explosives such as fog effects and imitation gunshot wounds for the film industry , and he also returned to chemical manufacturing at the Bermite Powder Company in Saugus .

Reconciling with Cameron , they resumed their relationship and moved into a former coach house on Orange Grove Avenue . Parsons converted its large , first @-@ floor laundry room into a home laboratory to work on his chemical and pyrotechnic projects , homebrew absinthe and stockpile his materials . They let out the upstairs bedrooms and began holding parties that were attended largely

by bohemians and members of the Beat Generation , along with old friends including Forman , Malina and Cornog . They also congregated at the home of Andrew Haley , who lived on the same street . Though Parsons in his mid @-@ thirties was a " prewar relic " to the younger attendees , the raucous socials often lasted until dawn and frequently attracted police attention . Parsons also founded a new Thelemite group known as " the Witchcraft " , whose beliefs revolved around a simplified version of Crowley 's Thelema and Parsons ' own Babalon prophecies . He offered a course in its teachings for a ten dollar fee , which included a new Thelemic belief system called " the Gnosis " , a version of Christian Gnosticism with Sophia as its godhead and the Christian God as its demiurge . He also collaborated with Cameron on Songs for the Witch Woman , a collection of poems which she illustrated that remained unpublished until 2014 .

= = = Death : 1952 = = =

Parsons and Cameron decided to travel to Mexico for a few months , both for a vacation and for Parsons to take up a job opportunity establishing an explosives factory for the Mexican government . They hoped that this would facilitate a move to Israel , where they could start a family , and where Parsons could bypass the U.S. government to recommence his rocketry career . He was particularly disturbed by the presence of the FBI , convinced that they were spying on him .

On June 17 , 1952 , a day before their planned departure , Parsons received a rush order of explosives for a film set and began to work on it in his home laboratory . An explosion destroyed the lower part of the building , during which Parsons sustained mortal wounds . His right forearm was amputated , his legs and left arm were broken and a hole was torn in the right side of his face . Despite these critical injuries , Parsons was found conscious by the upstairs lodgers . He tried to communicate with the arriving ambulance workers , who rushed him to the Huntingdon Memorial Hospital , where he was declared dead around thirty @-@ seven minutes after the explosion . Parsons ' last words are frequently said to have been " I wasn 't done " , but Cameron recited them as " Who will take care of me now ? " When his mother , Ruth , was informed of the events , she immediately committed suicide by taking an overdose of barbiturates . Cameron learned of her husband 's death from reporters at the scene when she returned home from grocery shopping .

Pasadena Police Department criminologist Don Harding led the official investigation ; he concluded that Parsons had been mixing fulminate of mercury in a coffee can when he dropped it on the floor , causing the initial explosion , which worsened when it came into contact with other chemicals in the room . Forman considered this likely , stating that Parsons often had sweaty hands and could easily have dropped the can . Some of Parsons ' colleagues rejected this explanation , saying that he was very attentive about safety . Two colleagues from the Bermite Powder Company described Parsons ' work habits as " scrupulously neat " and " exceptionally cautious " . The latter statement ? from chemical engineer George Santymers ? insisted that the explosion must have come from beneath the floorboards , implying an organized plot to kill Parsons . Harding accepted that these inconsistencies were " incongruous " but described the manner in which Parsons had stored his chemicals as " criminally negligent " , and noted that Parsons had previously been investigated by the police for illegally storing chemicals at the Parsonage . He also found a morphine @-@ filled syringe at the scene , indicating that Parsons was narcotized . The police saw insufficient evidence to continue the investigation and closed the case as an accidental death .

Both Wolfe and Smith suggested that Parsons ' death had been suicide , stating that he had suffered from depression for some time . Others theorized that the explosion was an assassination planned by Howard Hughes in response to Parsons ' suspected theft of Hughes Aircraft Company documents . Cameron became convinced that Parsons had been murdered ? either by police officers seeking vengeance for his role in the conviction of Earl Kynette or by anti @-@ Zionists opposed to his work for Israel . One of Cameron 's friends , the artist Renate Druks , later stated her belief that Parsons had died in a rite designed to create a homunculus . His death has never been definitively explained .

The immediate aftermath of the explosion attracted the interest of the U.S. media , making headline news in the Los Angeles Times . These initial reports focused on Parsons ' prominence in rocketry

but neglected to mention his occult interests . When asked for comment , Aerojet secretary @-@ treasurer T.E. Beehan said that Parsons " liked to wander , but he was one of the top men in the field " . However , within several days , journalists had discovered his involvement in Thelema and emphasized this in their reports .

A private prayer service was held for Parsons at the funeral home where his body was cremated . Cameron scattered his ashes in the Mojave Desert , before burning most of his possessions . She later tried to perform astral projection to commune with him . The O.T.O. also held a memorial service ? with attendees including Helen and Sara ? at which Smith led the Gnostic Mass .

= = Personal life = =

= = = Personality = = =

Although considered effeminate as a child , in adult life Parsons was known to exhibit an attitude of machismo . His FBI file described him as " potentially bisexual " and he once expressed experiencing a latent homosexuality . The actor Paul Mathison claimed to have had a gay relationship with Parsons in the 1950s , though this was disputed by others who knew him and Cameron . Parsons had the reputation of being a womanizer , and was notorious for frequently flirting and having sexual liaisons with female staff members at JPL and Aerojet . He was also known for personal eccentricity such as greeting house guests with a large pet snake around his neck , driving to work in a rundown Pontiac , and using a mannequin dressed in a tuxedo with a bucket labelled " The Resident " as his mailbox .

As well as a fencing and archery enthusiast , Parsons was also a keen shooter ; he often hunted jack rabbits and cotton tails in the desert , and was amused by mock duelling with Forman while on test sites with rifles and shotguns . Upon proposing to his first wife Helen , he also gifted her with a pistol . Parsons also enjoyed playing pranks on his colleagues , often through detonating explosives such as firecrackers and smoke bombs , and was known to spend hours at a time in the bathtub playing with toy boats while living at the Parsonage .

As well as intense bursts of creativity , Parsons suffered from what he described as " manic hysteria and depressing melancholy . " His father Marvel , after suffering a near @-@ fatal heart attack , died as a psychiatric patient at St. Elizabeths Hospital in Washington D.C. diagnosed with severe clinical depression , a condition Pendle suggested the younger Parsons inherited .

= = = Professional associations = = =

Parsons ' obituary listed him as a member of the Army Ordnance Corps Association , the American Institute of Aeronautics and Astronautics , the American Chemical Society , the American Association for the Advancement of Science , and ? despite his lack of an academic degree ? the Sigma Xi fraternity . It also stated that he had turned down several honorary degrees .

= = Philosophy = =

= = = Religious beliefs = = =

Parsons adhered to the occult philosophy of Thelema , which had been founded in 1904 by the English occultist Aleister Crowley following a spiritual revelation that he had in the city of Cairo , Egypt , when ? according to Crowley 's own accounts ? a spirit being known as Aiwass dictated to him a prophetic text known as The Book of the Law . Prior to becoming aware of Thelema and Crowley , Parsons ' interest in esotericism was developed through his reading of The Golden Bough ( 1890 ) , a work in comparative mythology by Scottish social anthropologist James George Frazer . Parsons had also attended lectures on Theosophy by philosopher Jiddu Krishnamurti with his first

wife Helen , but disliked the belief system 's sentiment of " the good and the true " . During rocket tests , Parsons often recited Crowley 's poem " Hymn to Pan " as a good luck charm . He took to addressing Crowley as his " Most Beloved Father " and signed off to him as " thy son , John " .

In July 1945 , Parsons gave a speech to the Agape Lodge , in which he attempted to explain how he felt that The Book of the Law could be made relevant to " modern life " . In this speech , which was subsequently published under the title of " Doing your Will " , he examined the Thelemite concept of True Will , writing that :

The mainspring of an individual is his creative Will . This Will is the sum of his tendencies , his destiny , his inner truth . It is one with the force that makes the birds sing and flowers bloom ; as inevitable as gravity , as implicit as a bowel movement , it informs alike atoms and men and suns .

To the man who knows this Will , there is no why or why not , no can or cannot ; he IS !

There is no known force that can turn an apple into an alley cat ; there is no known force that can turn a man from his Will . This is the triumph of genius ; that , surviving the centuries , enlightens the world .

This force burns in every man .

Parsons identified four obstacles that prevented humans from achieving and performing their True Will , all of which he connected with fear : the fear of incompetence , the fear of the opinion of others , the fear of hurting others , and the fear of insecurity . He insisted that these must be overcome , writing that " The Will must be freed of its fetters . The ruthless examination and destruction of taboos , complexes , frustrations , dislikes , fears and disgusts hostile to the Will is essential to progress . "

Though Parsons was a lifelong devotee to Thelema , he grew weary of and eventually left the Ordo Templi Orientis ? the religious organization that began propagating Thelema under Crowley 's leadership from the 1910s ? which Parsons viewed , despite the disagreement of Crowley himself , as excessively hierarchical and impeding upon the rigorous spiritual and philosophical practice of True Will , describing the O.T.O. as " an excellent training school for adepts , but hardly an appropriate Order for the manifestation of Thelema " . In this sense Parsons was described by Carter as an " almost fundamentalist " Thelemite who placed The Book of the Law 's dogma above all other doctrine .

= = = Politics = = =

From early on in his career , Parsons took an interest in socialism and communism , views that he shared with his friend Malina . Under the influence of another friend , Sidney Weinbaum , the two joined a communist group in the late 1930s , with Parsons reading Marxist literature , but he remained unconvinced and refused to join the American Communist Party . Malina asserted that this was because Parsons was a " political romantic " , whose attitude was more anti @-@ authoritarian than anti @-@ capitalist . Parsons would later become critical of the Marxist @-@ Leninist government of the Soviet Union led by Joseph Stalin , sarcastically commenting that

The dictatorship of the proletariat is merely temporary ? the state will eventually wither away like a snark hunter , leaving us all free as birds . Meanwhile it may be necessary to kill , torture and imprison a few million people , but whose fault is it if they get in the way of progress ?

During the era of McCarthyism and the Second Red Scare in the early 1950s , Parsons was questioned regarding his former links to the communist movement , by which time he denied any connection to it , instead describing himself as " an individualist " who was both anti @-@ communist and anti @-@ fascist . In reaction to the McCarthyite red @-@ baiting of scientists , he expressed disdain that

Science , that was going to save the world in H. G. Wells ' time is regimented , straight @-@ jacked , [ and ] scared shitless , its universal language diminished to one word : security .

Parsons was politically influenced by Thelema ? which holds to the ethical code of " Do what thou wilt " ? equating this principle to the libertarian views of some of the Founding Fathers of the United States in his article " Freedom is a Lonely Star " , claiming that by his own time these values had been " sold out by America , and for that reason the heart of America is sick and the soul of America

is dead . " He proceeded to criticize many aspects of contemporary U.S. society , particularly the police force , remarking that " The police mind is usually of a sadistic and homicidal trend " and noting that they carried out the " ruthless punishment of symbolic scapegoats " such as African @-@ Americans , prostitutes , alcoholics , homeless people and sociopolitical radicals , under the pretense of a country that upheld " liberty and justice for all . "

To bring about a freer future Parsons believed in liberalizing attitudes to sexual morality stating that , in his belief , the publication of the Kinsey report and development of the psychonautical sciences had as significant an influence on Western society as the creation of the atomic bomb and the development of nuclear physics . He also believed that in the future the restrictions on sexual morality within society should be abolished in order to bring about greater freedom and individuality . Parsons concluded that

the liberty of the individual is the foundation of civilization . No true civilization is possible without this liberty and no state , national or international , is stable in its absence . The proper relation between individual liberty on the one hand and social responsibility on the other is the balance which will assure a stable society . The only other road to social equilibrium demands the total annihilation of individuality . There is not further evasion of nature 's immemorial ultimatum : change or perish but the choice of change is ours .

Jack Cashill , American studies professor at Purdue University , argues that " Although his literary career never got much beyond pamphleteering and an untitled anti @-@ war , anti @-@ capitalist manuscript " , Parsons played a significant role ? greater than that of Church of Satan founder Anton LaVey ? in shaping the Californian counterculture of the 1960s and beyond through his influence on contemporaries such as Hubbard and Heinlein . Hugh Urban , religious studies professor at Ohio State University , cites Parsons ' Witchcraft group as precipitating the neopagan revival of the 1950s

Science fiction writer and occultist Robert Anton Wilson described Parsons ' political writings as exemplifying an " ultra @-@ individualist " who exhibited a " genuine sympathy for working people " , strongly empathized with feminism and held an antipathy toward patriarchy comparable to that of John Stuart Mill , arguing in this context that Parsons was an influence on the American libertarian and anarchist movements of the 20th century . Parsons was also supportive of the creation of the State of Israel , making plans to emigrate there when his military security clearance was revoked .

= = Legacy and influence = =

In the decades following his death , Parsons would be better remembered among the Western esoteric community rather than their scientific counterpart , with his recognition in the latter frequently amounting to a footnote . For instance , English Thelemite Kenneth Grant suggested that Parsons ' Babalon Working marked the start of the appearance of flying saucers in the skies , leading to phenomena such as the Roswell UFO incident and Kenneth Arnold UFO sighting . Cameron herself postulated that the 1952 Washington , D.C. UFO incident was a spiritual reaction to Parsons ' death . In 1954 she portrayed Babalon in American Thelemite Kenneth Anger 's short film Inauguration of the Pleasure Dome , viewing this cinematic depiction of a Thelemic ritual as aiding the literal invocation of Babalon begun by Parsons ' working , and later claimed that his Book of the AntiChrist prophecies were fulfilled through the manifestation of Babalon in her person .

In December 1958 JPL was integrated into the newly established National Aeronautics and Space Administration , after having built the Explorer 1 satellite that commenced America 's Space Race with the Soviet Union . Aerojet was contracted by NASA to build the main engine of the Apollo Command / Service Module , and the Space Shuttle Orbital Maneuvering System . In a letter to Malina , von Kármán ranked Parsons first in a list of figures he viewed as most important to modern rocketry and the foundation of the American space program . According to Richard Metzger , Wernher von Braun ? who was nicknamed " The Father of Rocket Science " ? once argued that Parsons was more worthy of this moniker . In October 1968 Malina ? himself a pioneer in sounding rocketry ? gave a speech at JPL in which he highlighted Parsons ' contribution to the U.S. rocket project , and lamented how it had come to be neglected , crediting him for making " key



contributions to the development of storable propellants and of long duration solid propellant agents that play such an important role in American and European space technology . "

The same month JPL held an open access event to mark the 32nd anniversary of its foundation ? which featured a " nativity scene " of mannequins reconstructing the November 1936 photograph of the GALCIT Group ? and erected a monument commemorating their first rocket test on Halloween 1936 . Among the aerospace industry , JPL was nicknamed as standing for " Jack Parsons ' Laboratory " or " Jack Parsons Lives " . The International Astronomical Union decided to name a crater on the far side of the Moon Parsons after him in 1972 . JPL would later credit him for making " distinctive technical innovations that advanced early efforts " in rocket engineering , with aerospace journalist Craig Covault stating that the work of Parsons , Qian Xuesen and the GALCIT Group " planted the seeds for JPL to become preeminent in space and rocketry . "

Many of Parsons ' writings would see posthumous publication as *Freedom is a Two @-@ Edged Sword* in 1989 , a compilation co @-@ edited by Cameron and O.T.O. leader Hymenaeus Beta ( ceremonial name of musician William Breeze ) , which incited a resurgence of interest in Parsons within occult and countercultural circles . For example , comic book artist and occultist Alan Moore noted Parsons as a creative influence in a 1998 interview with Clifford Meth . The Cameron @-@ Parsons Foundation was founded as an incorporated company in 2006 , with the intention of conserving and promoting Parsons ' writings and Cameron 's artwork , and in 2014 Fulgur Esoterica published *Songs for the Witch Woman* ? a limited edition book of poems by Parsons with illustrations by Cameron , released to coincide with his centenary . An exhibition of the same name was held at the Museum of Contemporary Art , Los Angeles .

In 1999 Feral House published the biography *Sex and Rockets : The Occult World of Jack Parsons* by John Carter , who expressed the opinion that Parsons had accomplished more in under five years of research than Robert H. Goddard had in his lifetime , and noted that his role in the development of rocket technology had been neglected by historians of science ; conversely , Carter thought that Parsons ' abilities and accomplishments as an occultist had been overestimated and exaggerated among Western esotericists , emphasizing his disowning by Crowley for practising magic beyond his grade . Feral House republished the work as a new edition in 2004 , accompanied with an introduction by Robert Anton Wilson . Wilson believed that Parsons was " the one single individual who contributed the most to rocket science " , describing him as being " very strange , very brilliant , very funny , [ and ] very tormented " , and considering it noteworthy that the day of Parsons ' birth was the predicted beginning of the apocalypse advocated by Charles Taze Russell , the founder of the Jehovah 's Witness movement .

A second biography of Parsons was published in 2005 through Weidenfeld & Nicolson with the title *Strange Angel : The Otherworldly Life of Rocket Scientist John Whiteside Parsons* ; it was authored by George Pendle , who described Parsons as " the Che Guevara of occultism " and noted that although Parsons " would not live to see his dream of space travel come true , he was essential to making it a reality . " Pendle considered that the cultural stigma attached to Parsons ' occultism was the primary cause of his low public profile , noting that " Like many scientific mavericks , Parsons was eventually discarded by the establishment once he had served his purpose . " It was this unorthodox mindset , creatively facilitated by his science fiction fandom and " willingness to believe in magic 's efficacy " , Pendle argued , " that allowed him to break scientific barriers previously thought to be indestructible " ? commenting that Parsons " saw both space and magic as ways of exploring these new frontiers ? one breaking free from Earth literally and metaphysically . "

L. Ron Hubbard 's role in Parsons ' Agape Lodge ? and the ensuing yacht scam ? was explored in Russell Miller 's 1987 Hubbard biography *Bare @-@ faced Messiah* . Parsons ' involvement in the Agape Lodge would also be discussed by Martin P. Starr in his history of the American Thelemite movement , *The Unknown God : W.T. Smith and the Thelemites* , published by Teitan Press in 2003 . Parsons ' occult partnership with Hubbard was also mentioned in Alex Gibney 's 2015 documentary film *Going Clear : Scientology and the Prison of Belief* , produced by HBO .

Before his death , Parsons appeared in science fiction writer Anthony Boucher 's murder @-@ mystery novel *Rocket to the Morgue* ( 1942 ) under the guise of mad scientist character Hugo Chantrelle . Another fictional character based on Parsons was Courtney James , a wealthy socialite

who features in L. Sprague de Camp 's 1956 short time travel story A Gun for Dinosaur . In 2005 Pasadena Babalon , a stage play about Parsons written by George D. Morgan and directed by Brian Brophy , premiered at Caltech as a production by its theater Arts Group in 2010 , the same year Cellar Door Publishing released Richard Carbonneau and Robin Simon Ng 's graphic novel , The Marvel : A Biography of Jack Parsons . In 2012 the Science Channel broadcast a documentary dramatization titled Magical Jet Propulsion in an episode of its Dark Matters : Twisted But True television series ? in which Parsons was portrayed by English actor Adam Howden ? while independent record label Drag City released Parsons ' Blues , an instrumental tribute single by experimental rock act Six Organs of Admittance . In 2014 AMC Networks announced plans for a serial television dramatization of Parsons ' life titled Strange Angel , produced by Ridley Scott and David Zucker , and written by Mark Heyman .

= = Patents = =