

Rocket Boys: A Memoir Study Guide

Rocket Boys: A Memoir by Homer Hickam

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Plot Summary

Homer "Sonny" Hickham Jr. grows up in Coalwood, a small town of 2000 people, hewn out of the West Virginia wilderness, a town built to extract bituminous coal from the earth beneath it. The second son of the coal mine superintendent Homer Hickham and his wife Elsie, Sonny, his parents and his brother, Bill, live a few hundred yards from the mine entrance. The kids from Coalwood grow up to enter the military or be miners. Sonny has no inspiration for a future outside of his home town until his life is changed in 1957. Sonny's imagination is captured when Sputnik, the first satellite put into orbit by the Russians, flies across the West Virginia sky. Fascination with stories of the desperate race by American scientists and engineers at Cape Canaveral, including rocket scientist Dr. Wernher von Braun, to catch up with the Russians, and an article on rocket mechanics in the November 1957 issue of Life Magazine inspires Sonny to build his own rocket. Sonny and friends, Roy Lee, O'Dell and Sherman, create a primitive rocket from household items. They take the explosive powder from twelve cherry bombs and accidentally blow up Mrs. Hickham's fence when they set the rocket off. His father forbids him to build more rockets. His mother, who desperately wants Sonny to find a future outside of Coalwood, tells him that Coalwood is a dying town and asks him if he thinks he can build a real rocket. She makes it clear to Sonny that she believes he can build a real rocket, even though his father does not. She asks Sonny to prove his father wrong. She tells him she has some money to put him through college but he has to do what he can to find a way to get out of Coalwood. He tries to understand how the town can be dying. Sonny continues building rockets with the help of new rocket boy Quentin and his friends. Their first real rocket, Auk 1, flies six feet. Their rockets and the fuel mixtures continue to improve as do their results. The young men enter high school and keep building and flying rockets with the help of townsfolk who believe in them, including miners, teachers, friends and family members. A teacher, Miss Riley, encourages the boys to enter a rocketry exhibit at the county and state science fairs. Sonny does so and wins. He then heads to the National Science fair and receives a beautiful gold and silver medal. The boys launch the last of their rockets in a celebration with the entire town. Sonny and all of the rocket boys go to college. Sonny never meets Wernher von Braun but he does go on to fulfill his boyhood dream and become a NASA engineer, 21 years after he fired his last rocket. His father eventually dies from a coal mine related lung disease. Ultimately, the Coalwood mine is flooded and abandoned, though it lives in the hearts of its former inhabitants and through Sonny's memoir.



Chapter 1, Coalwood- Chapter 2, Sputnik

Chapter 1, Coalwood- Chapter 2, Sputnik Summary and Analysis

"Until I began to build and launch rockets, I didn't know my home town was at war with itself over its children, and that my parents were locked in a kind of bloodless combat over how my brother and I would live our lives. I didn't know that if a girl broke your heart, another girl, virtuous at least in spirit, could mend it on the same night. And I didn't know that the enthalpy decrease in a converging passage could be transformed into jet kinetic energy if a divergent passage was added. The other boys discovered their own truths when we built our rockets, but those were mine"(p. 1). This opening from "Rocket Boys," establishes that Homer "Sonny" Hickham Jr.'s story is the story of a boy who learns that Coalwood, his hometown and a mining town, is in conflict about the future of its children just as his parents are at war over his future. He learns that a broken heart isn't terminal and can be mended by another girl on the same night. This opening foreshadows what the book is about and the conflict Sonny will face to make his rocket dreams come true. The chapter introduces the town of Coalwood, establishes the tensions between Sonny's mother Elsie and his father Homer Sr., and between Sonny, Homer Jr., and his brother Jim. It also reveals that Elsie has always held that Sonny is not like his father, that he is different. Her thoughts and feelings about her second son, and her support of his interests, inspire Sonny to believe in a future outside of Coalwood.

In chapter two, Sonny' reveals that there were two distinct phases in his life, before October 5, 1957 when Sputnik was launched by the Russians and after Sputnik. Sonny's brother Jim is a year ahead of him and a football star. One Saturday morning Elsie wakes Sonny early. The radio announcer plays the beep beep sound made by Sputnik. Sonny explains a space satellite to his mother. Sonny is glad to have his friends Roy Lee, Sherman and O'Dell, as other boys, boys with union fathers, view Homer Hickham, Sr. as the enemy and Sonny by extension. The newspapers are filled with stories of attempts by American scientists and Cape Canaveral engineers, trying to catch up with the Russians. Sonny grows fascinated by it all. He reads every article he can find about Cape Canaveral and watches all news programs. He learns about Dr. Wernher von Braun, a rocket scientist. Sonny wants to work with him and realizes he will need to prepare, get some "skills of some kind or special knowledge" (p. 31). Sonny stays up to see Sputnik and has never seen anything so marvelous in his life. This chapter makes clear that Sonny's life could be divided into two parts, the life he lived before the launch of the Russian satellite Sputnik and the life he lived after. Inspired by the media focus on Sputnik and a "Life" magazine article with rocket illustrations, Sonny determines to build and launch a rocket and blows up his mother's backyard fence in the process.



Chapter 3, Mom- Chapter 4, The Football Fathers

Chapter 3, Mom- Chapter 4, The Football Fathers Summary and Analysis

In chapter three, wooden splinters whistle as big chunks of the fence fly into the sky. The debris burns. Some people in Coalwood wonder if the mine has blown up or if the Russians have attacked. Homer Sr. and Elsie start to fight when Sonny's father fears he will be embarrassed all over Coalwood. When Sonny realizes that his mother and father are "about to go off onto one of their standard quarrels," (p. 41) he eases back into the shadows with the dogs. They fight. The news travels all over town via the "fence line" method of communication. "Didn't I tell you not to blow yourself up?" his mother asks. His mother tells him he's a sweet kid but that's he's just been wandering, without direction. She desperately wants Sonny to find a future outside of Coalwood, tells him Coalwood is a dying town and asks him if he thinks he can build a real rocket. She makes it clear to Sonny that she believes he can build a real rocket, even though his father does not. She asks Sonny to prove his father wrong. She tells him she has some money to put him through college but he has to do what he can to find a way to get out of Coalwood. He tries to understand how the town can be dying. Chapter three reveals that Homer Sr. is generally more concerned with appearances than Sonny's feelings. In fact we learn that he really hasn't considered Sonny at all. Sonny's mother makes clear that Sonny's father doesn't think he has much of a future and doesn't believe he can build a rocket. She does believe in him and begs him to prove his father wrong so she can send him to college with the savings she has created. For the first time Sonny feels stupid and realizes he'll have to acquire some skills to build rockets and get to work at Cape Canaveral.

In chapter four, it is revealed that the whole town, after realizing the mine didn't explode and the Russians didn't attack, laughs about Sonny's exploding rocket and Elsie's fence for a week. The football players mock Sonny and his friends the most, calling them "sisters" (p. 47). Sonny's friends say that they aren't going to build another rocket. Sonny says fine, he'll build one by himself. When Sonny is on his way home, some passing miners, on their way to work, grin real big and yell, "Rocket boy!" He wonders what he has gotten himself into, now that he has told so many people that he is going to build a another rocket. He wonders what the secret is that makes a rocket fly. The high school football team ended their season with a win as expected. Then, although it is not a surprise, the state athletic association rules that they are not eligible to play in the state championship game. Homer Sr. focuses on issues with the mine. Sonny gets called "rocket boy" for the first time, after he's told many people he's going to build more rockets, and he wonders if he's bitten off more than he can chew.



Chapter 5, Quentin- Chapter 6, Mr. Bykovsky

Chapter 5, Quentin- Chapter 6, Mr. Bykovsky Summary and Analysis

Sonny approaches the "class joke," (p. 61) Quentin, about how to build rockets. Sonny asks what Quentin knows and the boy shares information about the history of rocketry and the various propellants that have been used. Quentin shares, "Newton's third law. For every action, there is an equal and opposite reaction" (p. 65). Sonny has the leadership skills and ability to acquire materials and Quentin has the scientific knowhow to help Sonny start to figure out rocketry. Sonny and Quentin want the same thing, to build rockets and end up at Cape Canaveral. Dorothy and Sonny start to study biology on Sunday afternoons. Sonny uses his scrip and money earned from delivering newspapers to shop for saltpeter, sulfur and charcoal for rocket fuel. Quentin and Sonny develop and test rocket fuel. Sonny realizes that without Quentin he might have been too embarrassed to fail, in front of God and everybody. With Quentin, Sonny feels scientific, no matter what happens. He recognizes that, "Failure just added to our body of knowledge" (p. 71). Roy Lee shows up, the three of them launch the first rocket, it emits a nasty, stinky, yellowish smoke and falls over. The second rocket blows up. Homer Sr. says Sonny must stop, because people keep calling to complain. Elsie makes them promise not to burn Coalwood down and then amends his command that they stop to their need to find a better place to launch, one that isn't behind the house.

Chapter six starts with the launch of Explorer-1 aboard a Jupiter-C rocket on January 31, 1958. Sonny lays out a plan to form a rocket club called the Big Creek Missile Agency, or BCMA, in imitation of von Braun's ABMA. He and Quentin are going to learn all they can about rockets and then design, build and launch them. Roy Lee, O'Dell and Sherman all agree. Sonny and Quentin sketch crude drawings and theorize. Quentin tells him about the county science fair, a competition where winners go to state and maybe even on to the nationals. Miss Riley encourages them to consider entering the science fair. Sonny explains to Quentin that besides not knowing how to build a rocket, they would just embarrass themselves and be up against the rich Welch students with businessman, banker, lawyer, judge, fathers whose kids always win. Nearly every Sunday, Sonny thumbs rides to Dorothy's for study sessions. He is still in love with her, but she perceives him as a good friend. The BCMA experiment with new propellant and get the help of Mr. Bykovski again. They shoot off three new rockets, Auk II, II and IV, although Quentin is urging them to wait until they can control the direction better. An out-of-control rocket damages part of Homer Sr.'s mine office. They say to Homer Sr., "looks like your boy wants to be a rocket scientist". Homer Sr. says that Sonny doesn't know what he wants to be. Looking at the rocket, Homer Sr. says "He's a thief," then adds, "And so is the man at this mine who helped him" (p. 94).



Chapter 7, Cape Coalwood- Chapter 8, Construction of the Cape

Chapter 7, Cape Coalwood- Chapter 8, Construction of the Cape Summary and Analysis

In chapter seven, Quentin takes off, escaping from Coalwood, as Homer Sr. isn't interested in him. Homer Sr. orders Sonny to walk home then forces Sonny to watch as he pours his son's chemicals into the creek. Homer Sr. tells Sonny this is the end of it, any other hobby but no more rockets. Homer Sr. figures it Mr. Bykovski helped him and reassigns him to a position inside the mine. Bykovski gives Sonny four new Auks. Sonny is excited and recognizes that the BCMA is now an "outlaw organization," (p. 97) which makes him feel good. The BCMA figure out that the easiest way to test their new rocket powder mix without using the hot-water heater is to use a pop bottle. Roy Lee has brought a brassiere and that teaches the boys his "adult secrets" (p. 99) or how to unhook a bra with one hand. They learn that fine ground powder blows up especially well. The boys test fuels but really need a new rocket range. Reverend Lanier gives a sermon on father's helping sons to dream. Then he admits he's talking about their very own "rocket boys" and says they are "dreaming great dreams" and that they "should be helped, not stifled" (p. 106). After services, Homer Sr. takes Sonny for a driving lesson, and they end up at an abandoned slack dump, far enough away from town. Sonny envisions Cape Coalwood and recklessly asks his father for materials to build a blockhouse out of scrap lumber and tin. His father agrees if Sonny will promise to "keep the rocket-launching business out of sight and out of mind in Coalwood" (p. 108). Sonny can't wait to tell Quentin that the BCMA has a home.

In chapter eight, the rocket boys construct Cape Coalwood. They are inspired by the weekly launch of ballistic missiles by the U.S. Air Force and Dr. von Braun's launch of another Explorer, thirty-one pounds, into orbit. Sonny reads where Dr. von Braun may leave the Army to go and work for NASA. Sonny knows that if he does so, then he'll shoot for NASA as well. Homer Sr. mentions that he spoke to Ike Bykovski who mentioned teaching Sonny to machine. At school, Valentine, a well- built Sub-Deb, flirts and is friendly with Sonny. Mr. Turner announces the football team is suspended for the entire year. Gloom settles over Coalwood. The boys build their blockhouse, singing while they do so. Quentin sleeps over, in Sonny's bed. Homer Sr. questions Sonny about why he's sleeping downstairs. Sonny tells him why. His father asks if they've built the blockhouse already. Sonny says halfway but thinks to himself that if Jim were in the BCMA that his father would be on site building the blockhouse with the boys. Sonny listens to his parents, his mom in her own room, his dad creeping down the hall, his mom settling onto her mattress, his dad slipping into his own room. He realizes a little bit about the loneliness and frustration that seems to often fill their house.



Chapter 9, Jake Mosby- Chapter 10, Miss Riley

Chapter 9, Jake Mosby- Chapter 10, Miss Riley Summary and Analysis

In chapter nine, Sonny meets Jake Mosby. Jake is drunk from moonshine. Jake says, "Your dad..." and then, after pausing and repeating "Your dad...", cannot finish the sentence. Sonny finishes it for him. "I've heard my dad's a sonuvabitch when it comes to you Ohio junior engineers..." Jake laughs and says that yeah, Homer Sr. is an SOB. Sonny says, "Welcome to Coalwood," then offers Jake the paper. The company announces changes for Coalwood, related to a new coal preparation plant. It makes people nervous, they suspect a conspiracy. Homer Sr. won't outright give Sonny cement for a launch pad, but he tells him where he can find some. He is helping Sonny, without admitting to it. To open Cape Coalwood, Sonny loads Auk V with bottle-tested finely ground black powder and the powdered glue. The boys build their block house and shoot off rockets at Cape Coalwood with a member of the press, Jake, and various miners supporting them. Basil Oglethorpe, who writes for the McDowell County Banner, says, "Oh, it's just like Cape Canaveral," and exclaims. "I love it!" (p. 131). Sonny leaves Auks VI, VII, and VIII, to cure. They fire all three the Saturday they get back. Jake and Basil are there again. Two of the rockets fly, one bounces and explodes. Mr. Bykovski meets with the boys at the machine shop to teach them the fundamentals of welding and cutting steel, so they can build their own rockets. The boys build their block house and shoot off rockets at Cape Coalwood with a member of the press and various miners attending and supporting them. The boys look at space through Jake's old telescope and he gives them his trig book so they can calculate how high their rockets fly.

In chapter ten, Basil makes good on his statement about making the rocket boys famous. The first day of school in 1958 is also the first day of football suspension and the school, unlike every other year, isn't entirely focused on the football players. Sputnik inspires an intensified curriculum. The boys get into trouble when O'Dell and Roy Lee try to pilfer some old telephone equipment. They make a business deal with Mr. Van Dyke, and avoid having their parents find out, but go into debt for \$37. O'Dell thinks they can earn money next summer by digging up cast iron. The boys launch the following weekend. Auk X sits and fizzles because of wet fuel. Auk XI explodes. Sonny feels that if they can learn enough and be brave enough that they will go to the moon. The boys' popularity changes as they successfully shoot off rockets and are written about locally. Sonny learns that learning something complex isn't hard if he is motivated to learn it. Miss Riley's class inspires creation of a more advanced rocket fuel. The "rocket candy" is not a wild success. The boys look at the moon and decide to experiment with melting the rocket candy in advance and then loading the rockets. Sonny is convinced that if they can learn enough and be brave enough that the rocket boys can go to the moon.



Chapter 11, Rocket Candy- Chapter 12, The Machinists

Chapter 11, Rocket Candy- Chapter 12, The Machinists Summary and Analysis

Sonny sets up so the rocket boys can create "rocket candy" using saltpeter and sugar. Homer Sr. comes home and questions Sonny about his engineer career aspirations. He makes a special plan with Sonny, to show him something he's never shown Jim. The boys launch again, with 50 spectators attracted by Basil's articles and their own notices. The audience is festive and gives the school cheer. Sonny has never known what it is like to be on the receiving end of the song. He likes it. Some football players are negative, but the crowd is positive and keeps singing. Some girls chant, "Go rocket boys, go!" (p. 163). The boys try out their electrical-ignition system. Quentin has a new invention, a "theodolite" to figure out the altitude of their launched rockets. The rockets go high and far, the crowd cheers, and the boys race to run after their rocket. Rocket candy is a success. They discover that since the nozzle can't take the heat of the fuel, it erodes. The rocket boys experiment with their rocket candy and learn, through trial and error, to be more careful with chemicals. Elsie consistently believes in Sonny and the rocket boys when other people ridicule them. Homer Sr. sneaks Sonny into the mine to try and interest him in being a mining engineer but instead the gap between father and son widens. Elsie is enraged that Sonny was taken into the mine; she says he'll be a mining engineer over her dead body.

In chapter 12, Sonny makes up with his mother. He is unable to do the same with his father, as the man is never around. Elsie tells him if he ever goes down in the mine again that she will shoot him dead with his Ground-daddy's pistol. Sonny learns to think in a more organized way after spending much time thinking about rocket design and construction and working to get more mentally organized. Quentin is thrilled by this "sequential approach" (p. 179) to problem solving and says he thought that their work with rockets would change them in ways that couldn't be predicted. Sonny visits Mr. Bykovski. They discuss his father and von Braun, but his best advice is to trade with Leon Ferro for machine work. Mr. Ferro presents them with a new rocket. It's too heavy, it needs adjustments. Clinton Caton volunteers to do it. Caton lengthens the rocket, without input from Sonny. It ends up 2.5 feet long. Some people come to watch the launch. Auk XIV erupts from the pad, hurtles into the sky, and flies three thousand feet. A week later the machinists give them a new rocket, a three foot long one, that they built on their own. Auk XV flies three thousand feet. That Christmas, 1958, Elsie gives Sonny an autographed photograph of Dr. Wernher von Braun with a personal note as well. Sonny is overjoyed and gives her a big hug. Quentin fingers the items as if they are holy artifacts and reverently whispers, "Prodigious," (p. 192).



Chapter 13, The Rocket Book- Chapter 14, The Pillar Explosion

Chapter 13, The Rocket Book- Chapter 14, The Pillar Explosion Summary and Analysis

In January 1958 there is a huge snowstorm. O'Dell, Roy Lee and Sherman and Sonny ride their sleds over the mountains to school and arrive by lunchtime to learn that school is suspended. Miss Riley gives Sonny a book that she and Miss Bryson, the librarian, ordered, "Principles of Guided Missile Design." Sonny feels like she has given him something straight from God. Sonny says he'll enter the science fair if she wants him to. She says, "When you're ready," (p. 199). Sonny and the boys play cards at Emily Sue's house. Dorothy tortures Sonny by being flirtatious, but Roy Lee knows it isn't love. Sonny leaves late, and struggles to get home through the ice, snow and cold. Sonny is rescued, warmed up and cooked a hot meal, by Geneva Eggers. Sonny sleds down the mountain and later tells his dad that Geneva Eggers helped him. Homer Sr. tells Sonny a story about saving a baby from a fire that killed its whole family. Sonny doesn't know why his dad is telling him this horrible story until Homer Sr. reveals that Geneva Eggers was the little baby he saved. Homer Sr. says not to mention to being at Geneva's, because she's the girlfriend of bachelor miners and the occasional married man and runs moonshine. Her husband was killed years ago in a mine and the Gary police chased her away and his dad gave her the old shack and told Tag, the Coalwood constable, to leave her alone. Sonny is stunned by his father's courage, and proud of his heroism and all that he has accomplished in life since childhood.

In chapter fourteen, Sonny feels like he is almost a member of von Braun's team since he's gotten a letter from the great man. Sonny uses Jake's telescope on the Club House roof to look for Luna I, the Russian spacecraft and first man-made object to break out of earth's gravity. To Sonny's relief Luna I misses the moon. Quentin comes on the weekend to study the rocket book. He notes that the book presumes to understand thermodynamics and calculus. Sonny admits he skipped some parts. Quentin insists he should try to understand elementary gas dynamics because of the relationship to rocket nozzles. A pillar explodes at the mine. Sonny frets about calculations being done properly and his mother explains that mistakes get made proper calculations or not. Valentine and the Sub-Debs come to watch the rocket boys launch. Valentine warns him about Dorothy and suggests he find a girl who appreciates him. The mine phones work and all the rockets launch successfully. The boys learn bigger isn't better, that they lose altitude. Jim calls the rocket boys "sisters," and appears to be jealous that they are being written about in the paper while the football players are no longer of interest. Sonny really fails to see Dorothy's lack of love for him and that Valentine is truly flirting. Sonny and the rocket boys inspire and drive each other to learn math and other advanced information and concepts which develop their understanding of rocketry.



Chapter 15, The State Troopers- Chapter 16, A Natural Arrogance

Chapter 15, The State Troopers- Chapter 16, A Natural Arrogance Summary and Analysis

In chapter fifteen, Sonny and Quentin and the rocket boy ask Mr. Hartsfield for help in learning calculus. He is unsupportive, asking Sonny how he can hope to learn calculus when he didn't understand algebra. Quentin intercedes and states they've been learning trigonometry on their own but Mr. Hartsfield won't agree. He finally says he'll do what Principal Turner says to do but that there is no hope of this class, that they are a football and coal miner's school and that's all they've ever been. The boys are outraged and go to the principal. Miss Riley gets her Irish up, and speaks to Mr. Hartsfield. West Virginia State Troopers, who have read about the boys in the paper, show up and accuse the boys of starting a forest fire with a rocket. The boys are put in handcuffs and placed under arrest. Miss Riley shows up and asks questions about the location of the fire. Quentin explains that the device that started the fire isn't a rocket, it's an aeronautical flare from the Welch Airport beside the mountain where the fire burned. A week later the principal calls Quentin and Sonny back and says they'll offer a calculus class for six students. Unfortunately seven students sign up, and Sonny's grades are the lowest so he can't take the class. An experiment with Miss Riley's class gives the boys an idea for the next rocket propellant. Jim gets recruited for a college football scholarship. Sonny determines to teach himself calculus, using the book his father used to teach himself the mathematics he needed for his mining job.

In chapter sixteen, Sonny's dad discovers Sonny teaching himself calculus. Sonny asks his dad to come down to Camp Coalwood. His father says he will when he has time. Sonny points out that his father always has time for Jim. They debate again about whether or not Sonny will be a mining engineer. Sonny doesn't want that future. Homer Sr. gets angry and says that when we grow up we have to do things we don't want to do. Homer Sr. is disappointed. Sonny feels awkward and can't find words. He cries when his father leaves. He struggles to understand his desire to fly rockets and how it can be so wrong. Daisy Mae comforts him. Mr. Ferro has an idea to countersink the rocket nozzle. Sonny goes to get Auk XX. The rocket looks like "a first-rate, professional job" (p. 230) but there are many changes in the design. Quentin is upset about numerous modifications without testing. Sonny argues that it's a good thing; it'll take forever to improve the rockets otherwise. He tells Quentin that he wants to enter next year's science fair. Quentin brightens at that and says they'll all get to go to college if they win. He says, "Do you not understand, even now, what we have already accomplished, us coal miners' kids down in deepest West by God Virginia?" (p. 232). The rocket boys learn that the welded rocket couldn't sustain the pressure. Sonny glories that he is becoming tough like his dad and determines to prove himself through rocketry.



Chapter 17, Valentine- Chapter 18, The Bump

Chapter 17, Valentine- Chapter 18, The Bump Summary and Analysis

In chapter seventeen, Sonny goes to hear Ed Johnson spin rock and roll records at The Dugout, in the basement of the Owl's Nest restaurant across from the high school. The teens in the area dance fast and slow in the dim lighting. The rocket boys take a break and go dancing. Sonny's tired of being tough and arrogant like his dad. The boys dance with different girls. Sonny is devastated when Dorothy, who he's never seen there before, enters with his big brother Jim. When they dance he feels his "soul curl up and die." Valentine asks Sonny to dance and he stops thinking about Dorothy and Jim. She leads Sonny out of the Dugout and into the back seat of Buck's old Dodge and locks the doors. Romantic songs play and when Valentine lets Sonny up for air, the windows are steamy and gray. She tells him "Other women will have you in your life, but nobody will have you first except me, and don't you ever forget that," (p. 241). Sonny feels sorry for Buck who wails about loving Valentine, and because Buck is robbed of playing football his senior year, going to college, and probably of ever being anything more than he was. When Sonny goes home he sees the tippie area strangely lit, lights on every porch, and people walking up the dark streets toward the mine. His mother tells him that whatever else he does that night he musn't go to the mine.

In chapter eighteen, Sonny's mother tells him what happened at the mine. Lightening strike caused a bump, a fall, and men to be trapped in the mine with methane seeping in. Homer Sr. orders everyone who can get out to do so. Then he enters the mine with the rescue squad. Cars, trucks and an ambulance rush to the mine while thunder booms and lightning flashes. Sonny ponders his first experience with a girl and finds he is sad. Valentine loved him with pity in her heart. The storm quiets and Coalwood waits for the rescue team to break through. A body is lifted out. Sonny learns Mr. Bykovski has died. Sonny prays for the nightmare to end. His mom tells him he is selfish, that he's never thought about anyone but himself. Sonny realizes he is selfish. Mr. Bykovski's body is in the ambulance and he has just prayed for himself. All of the other men are alive. Sonny's father gets twelve stitches for an injury and nearly loses an eye. Everyone is relieved that only one man died. Sonny watches his parents return from the hospital but his mother glares to keep him away as she helps his father, whose eye is covered with a patch, into the house. Doc hisses to Sonny to stop his sniveling, that this town is no place for the weak, that the men in this town go into the pit and hold hands daily with death. He says that Bykovski built rockets for him because he wanted the best for him, and treated him like a son. Further, all the children in Coalwood belong to each other. Sonny loathes what he perceives as apathy in the face of death from the miners. He feels a terrible thing, all emotion leaves him and, for the first time in his life, he feels nothing.



Chapter 19, Picking Up and Going On- Chapter 20, O'Dell's Treasure

Chapter 19, Picking Up and Going On- Chapter 20, O'Dell's Treasure Summary and Analysis

In chapter nineteen, Sonny feels dull and thick. He quits building rockets, quits studying his rocketry book, and quits going to the machine shop. He avoids his parents. He is scared and wonders if everything that has happened has made him what he is meant to be - a good West Virginian, stoic and solid, filled with guilt but incapable of showing it. Sonny detests himself for feeling nothing. He tells Mr. Ferro, one of the machinists, that he's no longer in the rocket business. Then he thinks of Jake, a man with more love of life than anyone Sonny knows. He goes to find him and learns that he left for Ohio that morning. Sonny pets Daisy Mae but has nothing to say to her anymore. Sonny shuts out his friends and ignores Dorothy, who is with Jim, when she tries to talk to him. Miss Riley asks about his father and then questions him about giving up rocketry. She says that being proud and feeling sorry for yourself is a poor combination. She tells him that if he stops working on rockets he'll regret it for the rest of his life. Sherman, brave and good, tells Sonny he should go up to the bus stop. He does and sees Mrs. Bykovski who is about to leave town. He apologizes for what happened to Mr. Bykovski. She insists that there is one thing he can do for Ike... "Keep firing off those rockets!" (p. 255). The rocket boys fire off Auk XXI three weeks after the mine accident. The seamless steel tubing Mr. Caton ordered makes it the best rocket yet. Sonny is arrogant and rude to the boys about their need for a more sophisticated rock fuel. Roy Lee punches Sonny and knocks him to the ground. Sonny isn't sorry he was hit as it brings him to his senses.

In chapter twenty, we learn that Homer Sr.'s eye hasn't healed. Sonny's parents act as if nothing has happened. Sonny and his father hardly speak. Elsie lets Sonny get himself up. He misses the bus. Thrilled by the challenge, Jake drives him rapidly to Big Creek. Sonny forgets his books in the car and Jake brings them in and meets Miss Riley. He flirts with her and promises to call again. Sonny gives Jake a glowing recommendation, and later is jealous when he realizes that Jake and Miss Riley have started going out. When the school year ends, O'Dell shares his plan that the boys dig up scrap iron from the track bed of the old spur line. The BCMA owes Mr. Van Dyke for the telephone equipment and needs money to buy zinc dust. They prepare an expedition near the track bed site. With backbreaking labor, the boys dig for days and uncover pipe. Sonny slips and slashes his hand on iron fragments; the boys are hysterical and laugh as blood spurts from his wrist. O'Dell sobers and realizes that they have to walk Sonny out of there or he'll die. It takes six hours for them to walk out, and Sonny passes out. Doc stitches him up, with no painkiller because his dad got his stitches that way. The boys learn their scrap iron is worth \$4.00 and Doc sends Sonny a bill for \$5.00.



Chapter 21, Zincoshine- Chapter 22, We Do the Math

Chapter 21, Zincoshine- Chapter 22, We Do the Math Summary and Analysis

In chapter twenty-one, the rocket boys gather at Cape Coalwood to test the first of their zinc-sulfur rockets. The machinists, along with Reverend Richard and a least 100 Coalwood residents, gather. The Reverend tells him he dreamt of Sonny on the moon. Auk XXII detonates on the launch pad. The new propellant is bad. The company decides to sell the houses, and people chant "Strike!". Sonny decides the zinc-sulfur powder mix is too loose. A binding agent worked for rocket candy, so the boys decide to try a new one... alcohol. The boys get moonshine for their rockets and test it. Tag drives them each home. Sonny isn't too drunk or sick to remember how to manipulate his mother. He tells her how sorry he is. She doesn't punish him; he promises never to drink again. Many men lose their jobs when there is a cut off at the mine. Sonny works on his rockets and blows up the water heater with his zincoshine. Auk XXII-A breaks the mile barrier. Next, the boys try to measure rocket thrust. Homer Sr. drives Sonny to see Cape Coalwood being bulldozed. Sonny is furious when he sees a "No Trespassing," sign on the slack dump entrance. Homer Sr. reminds Sonny of his promise to never let another rocket land in Coalwood. The union men and machinists and other rocket boys arrive and attempt to re-build the boy's block house. Mr. Fuller yells at them and then at Homer Sr. Finally, Sonny's dad grabs Mr. Fuller by the leather jacket and lifts him off of the ground. Roy Lee says he guesses Homer Sr. is negotiating. Fuller stomps off. Homer Sr. says Sonny has a wide open field, agrees to give him materials, and says that Sonny can't blame him if he fails now.

In chapter twenty-two, Fuller leaves town. Jim is off at college. Sonny won't interact with Dorothy any more, though he watches her. As his father promises, the boys get whatever they need for the BCMA. Quentin and Sonny discuss rocket nozzle design and learn to make rocket design decisions they've never made before. They must determine how high and fast they want their rockets to go and what the payload will be. Quentin forces a reluctant Sonny to do, and redo, the differential equations required to design the De Laval nozzle. Mr. Turner allows the boys to enter the science fair, with Miss Riley overseeing the process. Sonny has taught himself so much about rocketry that he has a chance to win a bet with the principal of Welch high school. Mr. Ferro calls Mr. Caton in to do the work. Homer Sr. has to cut more men from the mine. Auk XXIII flies, but not as high as expected because it has erosion, and lands in ginseng. O'Dell is excited; selling ginseng will provide zinc dust money. Sonny dances with a girl at the Formal, and then takes her home. Auk XXIV flies successfully. Pooky Suggs complains that the rocket boys have the money to build rockets while the rest of the town is starving. Sonny tries to talk politics with his father. Someone shoots at Homer Sr., missing his head by chance because he just leaned forward to make a point to Sonny.



Chapter 23, Science Fairs- Chapter 24, A Suit for Indianapolis

Chapter 23, Science Fairs- Chapter 24, A Suit for Indianapolis Summary and Analysis

In chapter twenty-three, Elsie and her husband are not surprised by the bullet that narrowly missed Homer Sr. However, Homer and his son are shocked when they find out that Elsie has been investing in the stock market for years and plans to buy a house in Myrtle Beach. She does not care what the townsfolk say. Miss Riley talks to Sonny about the science fair and tells him she has Hodgkin's disease but is holding her own. Caton lets Sonny know that they are on strike per the union and he didn't finish the rockets. Sonny and Sherman sneak into the machine shop and try to make rocket nozzles, but they can't do it. Mr. Caton creeps in and says he'll finish. Sonny barely escapes some angry miners' sons. The strike is one of many across the country. Families are in dire straits. Mr. Caton furtively gives Sonny his bag of rocket stuff. Calvin Suggs and some boys come after Sonny and he loses his sack of rocket components. Calvin says he and the boys hope Sonny can help them get jobs when he goes to live at Cape Canaveral. Sonny says it'll be a while but Calvin says that's okay because they'll be in Coalwood or in the Army. Sonny will be able to find them. The next day the wet dirty sack of rocket nozzles and nose cones is left on Sonny's porch. Sonny competes in the Welch County Science Fair and to his amazement the rocket boys' entry, "A Study of Amateur Rocketry Techniques," wins. Sonny lets Daisy Mae out. She is killed when she is run over. Sonny goes to the area science fair finals and the rocket boys win. On the way back they see Herbert Humphrey who is running for president. Mr. Turner is thrilled, he's won his bets with the Welch principal and Sonny has made the school proud. Miss Riley says, "This just goes to show Big Creek students can do just about anything they want to do" (p. 327). When Sonny realizes he doesn't have to envy miners anymore, that he knows exactly who he is and where he is going, his ill feelings disappear.

In chapter twenty-four, Emily Sue takes Sonny shopping for a suit to wear to Indianapolis. Sonny convinces Emily Sue to let him shop alone. He shops where his brother Jim bought clothes in the past. They offer brown, gray, and blue suits. O'Dell comes in and says, "Old people's clothes." He's in town selling ginseng for zinc money, and looks through the racks until he finds one he likes. Sonny buys it. Emily Sue is shocked when she sees Sonny. Before they can discuss it, a convoy of cars wheels in and Senator Kennedy gives a presidential candidate speech. Sonny is allowed a question. He says he thinks they should go into space, so they can mine the moon. The crowd, who had been losing interest, like the thought, and rally. Emily Sue drags Sonny back and makes him return the sale suit and buy a dark blue one. Sonny is pleased with the light blue tie with a big red cardinal, the West Virginia bird, on it that he bought to wear while representing the Big Creek Missile Agency at the National Science Fair.



Chapter 25, The National Science Fair- Chapter 26, All Systems Go

Chapter 25, The National Science Fair- Chapter 26, All Systems Go Summary and Analysis

In chapter twenty-five, Sonny hones his speech for the science fair judges. Quentin quizzes him intensely and helps him prepare charts, diagrams, and designs. O'Dell finds black velvet for the display and builds boxes. Sherman and Billy photograph Cape Coalwood. Roy Lee makes 3 x 5 cards for each rocket component, listing the dimensions and functions. While the rocket boys focus on preparation for the National Science Fair, the mine is idle. Things are desperate. Strike funds are gone and the food from the state is running out. Mr. Caton begs Mr. Dubonnet and the union, and grudgingly gets permission, to allow him to create rocket components for the BCMA science fair display. Homer Sr. won't commit to move to Myrtle Beach with Elsie just yet, claiming he doesn't want the union to think they ran him off. Sonny is suspicious. Quentin relentlessly drills Sonny on the chemistry, physics, calculus and differential equations. Sonny wants to sleep at 3 AM, but Quentin makes him work so he won't disgrace the state of West Virginia. Sonny takes the bus to Indianapolis. Some of his rocketry display items are stolen. He makes a long distance call and the items are replaced last minute when people back home scramble to help. Dr. von Braun is there but Sonny never meets him. Sonny, in his suit and red cardinal tie, is thrilled to win a gold and silver medal. Sonny goes home to applause and cheers. He visits a clinic in Welch. Miss Riley is sick. Sonny suddenly realizes that he loves her, that he has never known and will never know anyone as good as she. Jake is with her. Sonny asks Jake about life then tells Jake he's scared of the future, Jake tells him, "Old son, we're all scared of that" (p. 350).

In chapter twenty-six, Sonny finally manages to piece together how the people of Coalwood replaced his stolen rocket items. Mr. Dubonnet and Homer Sr. went nose to nose outside the machine shop. Mr. Caton pushed between them and said they have to help "that boy," who's up there for Coalwood. Sonny's dad agreed to stay in Coalwood and signed the union contract. Elsie decided to stay in Coalwood as well, after she told Homer Sr. that he was undeserving of her staying and he agreed. Then the townspeople worked together to create the items Sonny needed and got them to Indianapolis. In 1960 the rocket boys graduate Big Creek High School. Dorothy is valedictorian, Quentin is salutatorian. Sherman and O'Dell are in the top ten and Billy and Sonny are back in the pack. Mr. Turner tells Sonny that he has brought great honor to the school. The boys launch the last of their rockets in a celebration with the entire town of Coalwood. Sonny has his dad launch the final rocket Auk XXXI. With the support of most of his community, Sonny goes from being a boy who can't do algebra or build a rocket to a boy who understands differential equations, can design rockets and develop rocket fuel, and successfully designs, constructs and flies rockets.



Epilogue

Epilogue Summary and Analysis

In the epilogue, all of the rocket boys go to college. Roy Lee becomes a banker and O'Dell goes into insurance and farming. Quentin, Bill, Sherman and Sonny become engineers. Sherman dies unexpectedly of a heart attack at age 26. Jim becomes a football coach. Dorothy grows up and becomes a wife and mother. He meets her twenty-five years later and still loves her. Although Miss Riley's disease went into remission, and she teaches a few years, she dies at age 32 in 1969. Sonny never meets Wernher von Braun but, after serving in Vietnam, he goes on to fulfill his boyhood dream and become an engineer and, 21 years after he fired his last rocket, works for NASA. His career in NASA is everything he dreams and hopes it will be. His parents settle in Myrtle Beach, after Homer Sr. is forced into retirement retires at the mine at age 65, then works five more years as a consultant. Sonny and Homer Sr. are never close and his father eventually dies from a coal mine related lung disease. Ultimately, the Coalwood mine is flooded and abandoned, though it lives forever the hearts of its former inhabitants and through Sonny's memoir "Rocket Boys." In November 1977, just before Sonny retires from NASA, an astronaut friend of Sonny's, Dr. Takai Doi, takes an Auk nozzle and one of the rocket boys' science medals up in a space shuttle and the BCMA finally goes into space.



Characters

Homer

Sonny is the second son of Homer Hickham Sr. and Elsie Lavender Hickham. A happy child from birth, he is near-sighted, a poor athlete, and a bit of a misfit who has a difficult relationship with his father who wanted a daughter and not a second son. Beaten up by certain other miner's sons, because his father is the Coalwood mine superintendent, and therefore considered the enemy by many union fathers who work in the mine, Sonny has a core group of boys who are his friends. His life is forever changed when the Russians launch the satellite Sputnik I. It flies over West Virginia and he is inspired to build rockets. The original rocket boy, Sonny has leadership skills and rallies a group of his friends to build rockets with him. Sonny forms the Big Creek Missile Agency, or BCMA to learn about and make rockets. He is different from his father and brother, more like his mother, and secretly talks to and confides in Daisy Mae, his fluffy calico cat. To learn to build rockets, which occurs over a three year period, must learn to design, develop and test rockets and rocket fuel and rally the support he needs to construct and shoot off multiple rockets. Rocket-building teaches Sonny a different way to think. Because rocket design requires an ability to remember many things, Sonny learns to think sequentially. He also teaches himself calculus and learns differential equations in order to pursue rocketry. Well liked and supported in his pursuit of his rocket goals and dreams, by many of Coalwood's inhabitants, including teachers, miners, and classmates, Sonny and his friends go on to successfully create and finally to win awards for rocketry. Sonny goes to college, on the Elsie Lavender Hickham college fund, becomes an engineer and ultimately fulfills his dream of becoming a NASA engineer.

Homer Hickham Sr.

Sonny's father, Homer Sr. is the Coalwood mine superintendent. A company man, who lacks a college degree, and was originally a common miner, Homer Sr. is consumed by his duties at the mine and works nearly constantly. He is so dedicated to the mine that he works double shifts when he is thirty-eight. When his mine or men are in trouble, he cannot be kept from the mine. Sonny strives to get his attention, appreciation and affection, but can't manage to do so. Homer Sr. favors his older son, Jim, who is a football star, and is the president of the Big Creek Football Fathers' Association. Homer survives colon cancer and, while Sonny is in high school, develops a spot on his lung. Although generally appearing indifferent, or even unsupportive, toward his son Sonny, Homer Sr. often looks the other way and allows access to materials which are essential for the rocket boys to build their rockets. Homer Sr. shows up, unexpectedly, to watch Sonny and the boys launch their last rockets. The boys invite him to participate. They have Homer Sr. light the fuse from the firing panel on the last rocket they will launch, the Auk XXXI. When the rocket launches successfully, and flies nearly six miles high, Sonny hopes that his father will shower him with the praise and love he craves. He does not. He has a coughing spasm and Sonny, instead of waiting for praise, goes to his father



and puts his arm around him and supports him and says, "You did really good, Dad," and then adds, "Nobody ever launched a better rocket than you." Homer stays with the mine, even working for five years as a consultant after forced into retirement at age 65. He eventually moves to the beach with his wife. Sonny and his father are never close, although they interact. When Sonny goes on a vacation, after finishing a tiring mission for NASA, Homer Sr.'s lungs finally collapse and he dies. Elsie scatters Homer Sr.'s ashes on the ocean. Later Sonny finds a box, with his name scrawled in Homer Sr.'s writing, which contains faded ribbons, medals and a perfectly crafted steel De Laval rocket nozzle.

Elsie Lavender Hickham

Elsie Lavender is the wife of Homer Hickham, Sr. and the mother of Sonny and Jim Hickham. She dreams of a home on the beach in Florida while creating a home for her husband and two boys. She is a strong advocate for her second son, Sonny, and tells him that he is different from the time he is a small child. When Sonny blows up her rose garden fence with his first rocket, a flash light fueled by cherry bomb powder, Elsie sees Sonny's rocket-building aspirations as his ticket to a future outside of Coalwood and the mine. She tells her son that she believes he can build a rocket, that his father does not, and begs her son to prove his father wrong. She periodically tells Sonny, "Just, don't blow yourself up," and consistently offers him inspiration and support and provides kitchen utensils and items, which Sonny uses to create and test rocket fuel in the basement of their home. Elsie takes care of the families numerous pets, including Sonny's cat and her pet squirrel Chipper. When Homer Sr. says that Sonny is thinking about becoming a mining engineer, after he secretly took his son on a tour of the mine and was caught, she says over her dead body. She writes to Dr. von Braun and tells him about her son Sonny's rocket building efforts, and he sends Sonny an autographed photo and a note which Elsie gives her son for Christmas. Elsie is careful with money and invests in the stock market, without her husband's knowledge, and saves the money needed to buy a house in Florida and also to send Sonny to college.

Jim Hickham

Jim Hickham is the oldest son of Homer Hickham Sr. and Elsie Lavender Hickham. A blond all-American athlete, he has hated his younger sibling since his birth. He is fashion conscious, has a peroxide curl on the front of his hair, spends hours primping in the bathroom, and spends so much on clothes at the men's clothing store in Welch, the town with more shops than Coalwood, that his mother says that he, "...must have been dropped off by vacationing Rockefellers." Jim and Sonny have brawled for as long as Sonny can remember. Although he is bigger, Sonny is sneakier and they manage to damage each other. Jim frequently calls Sonny a "sister," and ridicules his brother and his brother's interests, that Jim cannot understand. Jim is well-liked at school and big enough to avoid the beatings that Sonny endures as the small son of the mine superintendent.



Quentin

Quentin is an oddball at school, considered "the class joke," who speaks in a pseudo-English accent, carries an old leather briefcase and uses big words. Quentin is a loner who avoids physical activity and is considered to be some kind of genius. He becomes a rocket boy after Sonny asks him for advice about building rockets. Quentin and Sonny do the first crude rocket sketches and theorize how to build them. Quentin has a scientific and bookish orientation to their experience. Quentin is so scientific that he can't turn off his brain, even when thinking about girls. When Roy Lee teaches the boys how to unsnap a bra in one move, Quentin is thinking that bras should be redesigned, that there should be a "better system." At a key point in Sonny's life, Quentin insists that Sonny do the equations for the design of a De Laval nozzle. Sonny is frightened by doing them, as he learned calculus on his own, not taking the class with Quentin and the other rocket boys. Quentin pushes Sonny to do the equations to design the final rocket and nozzles, or all of their efforts to design a great rocket, a rocket that will do what it is supposed to do, will be lost. Quentin goes to college and becomes an engineer.

O'Dell

O'Dell is a small and excitable boy with pale hair. He, like the other rocket boys, doesn't mind that Sonny's dad is the mine superintendent. O'Dell's father is a garbage man and has a garbage truck. O'Dell learns about or knows where he can find all kinds of potentially useful building materials and objects. He is the BCMA treasurer and in charge of rocket supplies. O'Dell assembles protective shields for the boys, made of baseball caps with clear squares of plastic as face guards, the materials rescued from some garbage, so that they are protected when they make rocket candy. It's O'Dell's idea to dig up cast iron scrap metal to raise money for rocketry. When Sonny gets a serious injury, slicing his wrist against some sharp metal, O'Dell recognizes that it is serious, that Sonny could die, makes a tourniquet and forces Sonny and the boys to walk out to get to Doc, the town doctor. O'Dell also has the scheme to dig up ginseng and sell it, which turns out to be very lucrative for them. When the boys graduate, O'Dell goes to college and then goes into insurance and farming.

Roy Lee Cooke

Roy Lee Cooke is Sonny's best friend and founding member of the rocket boys. Roy Lee's father died in the mine. Because his brother works in the mine, Roy Lee and his mother and brother are allowed to stay in their house. Roy Lee has a more worldly life view than Sonny and tries to warn him to wise up about Dorothy. Roy Lee also teaches Sonny and the rocket boys "the ropes" about girls, with the idea that they can get girlfriends. One afternoon he pulls out a bra so the boys can practice the one-handed unhook the bra move, until they are all successful. Because Roy Lee has a car, he is in charge of transportation for the BCMA. Roy Lee knows the town moonshiner, John Eye, a former miner, who lost a foot in the mine and so is allowed to hang around town, and



sell moonshine to locals. Roy Lee has a car and drives the boys up to the little shack where they can buy some shine. John Eye provides the boys with the alcohol needed for their special propellant they call "Zincoshine" and they all have their first drinks. After graduating high school with his friends, Roy Lee goes to college and then becomes a banker.

Sherman Siers

Sherman Siers has been Sonny's friend, like most of the boys, since the first grade. A compact and muscular boy, he had polio which left his left leg shriveled and weak but he can still run better than Quentin. He never complains about his physical challenge and generally manages to keep up with the rest of the boys. Sherman is in charge of publicity and setting up the rocket range for the BCMA. Sherman is in Sonny's words "brave and good" and, during the time when Sonny is numb, after Mr. Bykovski's death, he tells Sonny he must go to the bus station and say he is sorry to Mrs. Bykovski. Because Sonny does so, Mrs. Bykovski says that there is one thing that Sonny can do for her and her dead husband... to keep building rockets. Sherman goes to college and becomes an engineer after high school. He dies unexpectedly of a heart attack when he is twenty six years old.

Willie

Billy Rose is the fairly quiet boy who is last to join the rocket boys, a year or so after the group is founded. In their class in school, Billy lives in Snakeroot Hollow. His persistence in asking to join is what leads the rocket boys to accept him. His excellent eye site and ability to run fast means he can track and find rockets easily after they have blasted off. When the rocket boys shoot off Auk XXII-A, which breaks the mile barrier, Billy chases it. He comes running back across the creek holding it high over his head, while the crowd cheers. When the boys shoot off Auk XXIII, it is Billy's sharp eyes that spot the rocket before anyone else. Billy goes to college and, like Sherman, Quentin, and Sonny, becomes an engineer.

Dorothy Plunk

A very popular and pretty, smart girl, who dates older boys in other high schools and in college, Dorothy is Sonny's first love. Sonny sees her as "God's perfection," and someone "...to be worshiped not handled." They are friends and he hitchhikes to have study sessions with her on Sundays for a couple of years of highschool. His love for her is inexorably altered when Sonny sees her on a date and dancing with his brother Jim at the Dugout. She is the valedictorian of their class .After high school graduation in 1960 Sonny doesn't see Dorothy for 25 years. When they re-connect at a high school reunion, his discovers he continues to have love for her in his heart and they are able to be friends.



Dr. Werner von Braun

Dr. Werner von Braun was a German-American rocket scientist, astronautics engineer and space architect, who led rocket development in Germany previously and is now in the United States. The frequent media coverage of von Braun's rocket development for the U.S. Army and his work at Cape Canaveral was hugely inspirational to and influences Sonny's decision to build rockets. Elsie Hickham writes Dr. von Braun and von Braun sends an autographed photograph and a note to Sonny. Sonny displays the photograph with his science fair rocketry exhibit. Dr. von Braun is at the National Science Fair but Sonny is unable to find and meet him, but meets someone who works with him daily.

Miss Riley

Miss Riley is the Big Creek High School chemistry and physics teacher who believes in and inspires Sonny Hickham to pursue science fair competition to bring honor to the school and town, which isn't known for academic excellence. Starting with the McDowell County Science Fair, she helps prepare him to compete. After Sonny is unable to find a book on rocketry, she gifts him with a rocketry textbook entitled "Principles of Guide Missile Design," which inspires Sonny to learn calculus, differential equations, and design nozzles, and do the calculations to design a rocket, with a De Laval nozzle, which ultimately leads to even greater rocket success and a win at each science competition level including the National Science Competition. Miss Riley tells Sonny that, although it may take him a while, she believes he can learn everything in the book. Miss Riley is one of many of Sonny, and the rocket boys, supporters, and is one of the few people who believes in him and provides critical emotional support. At a key moment, after Mr. Bykovsky's death, when Sonny has quit making rockets, Miss Riley tells him he must stop feeling sorry for himself and being proud, and that if he stops making rockets he will regret it for the rest of his life. She develops Hodgkin's disease and, although she goes into remission and is able to coach Sonny through the science fair, later succumbs to the disease and dies at the age of 32, in 1969.

Valentine Carmina

Valentine Carmina is a girl, perceived as Coalwood boys as being "stacked like a brick privy," who is a year older than Sonny and his friends. A popular Sub-Deb, a club of somewhat fast girls in distinctive leather jackets, she has always liked Sonny and sometimes sits next to him, and talks about life, or lets him walk her to class. Valentine always treats Sonny well. After Dorothy Plunk breaks Sonny's heart by dating and dancing with Jim at the Dugout, Valentine asks Sonny to dance. He does so and forgets Dorothy. Then Valentine takes Sonny outside to her boyfriend's Buck's old dodge. She is the first girl he is intimate with.



Basil Oglethorpe

Basil Oglethorpe is a thin, tall man who dresses so fancily that it causes Sonny's mouth to drop open. He writes for the "McDowell County Banner" and takes a special interest in the rocket boys. He shows up to see the boys shoot off a rocket and he and another fella lounge against a Pontiac fender. When the rocket is fired off it turns and flies at the men, narrowly missing them. Basil whoops and laughs and dances around, stopping to write notes on a little pad of paper. He is a huge fan and says, "Oh, it's just like Cape Canaveral, I love it!" Basil is determined to show his rocket boys the power of the press. He repeatedly writes about them, they become known all over the county. His writings get such a great response that he makes writing about the rocket boys a regular feature. More and more spectators start to watch the boys launch rockets, attracted by his articles (and the notices that the boys put up). He writes, "If you have any hope of understanding what the grand and glorious future holds for all who dare seize it, you must come to see the rocket boys of Coalwood" ("The McDowell County Banner," August 1958).

Reverend Lanier

Reverend Lanier is a preacher who gives a sermon, after receiving encouragement, if not guidance, from "The Great Six," the six teachers of the lower grades, on the topic of fathers and sons. He directly mentions the rocket boys and their great dreams and states they should be helped, and not hindered. He is later given negative feedback, by the company, but the deed is already done. His sermon results in Homer Sr. giving Sonny and the rocket boys the use of an abandoned slack dump to fire off their rockets.

Jake Mosby

Jake Mosby is a degree/engineer, one of the young engineers sent down annually to a type of coal mining boot camp that Hank Sr. runs in Coalwood. Sonny meets Jake for the first time, at his temporary residence in the Club house, hoping to sell him a newspaper subscription. Jake is recovering from an excess of moonshine and says, "Your dad..." and then, after pausing, and repeating "Your dad..." cannot finish the sentence. Sonny finishes it for him. "I've heard my dad's a sonuvabitch when it comes to you Ohio junior engineers..." Jake laughs and says that yeah, Homer Sr. is an SOB. Sonny says, "Welcome to Coalwood," then offers Jake the paper. Jake tells Sonny he can't afford to subscribe. Elsie tells Sonny later that Jake's wealthy family owns 20% of the steel company that owns the Coalwood mine operation. Jake is a real live wire, who drinks often, is handsome and comfortable and successful with women, and dates whichever pretty secretary is around. A vet, the rocket boys' experiments reminds him of his time in Korea and his childhood looking at the stars. He inspires Sonny to live. A powerful figure in the rocket boys lives, Jake has his old trig book and telescope sent down. He gives the boys the textbook so they can calculate how high their rockets fly. He keeps his telescope on the Club house roof, and lets them look through it. They look at different planets and stars and the Milky Way galaxy the first time they use his first



telescope from childhood. Jake leaves the telescope on top of the building, and the boys use it periodically including the night that NASA launches Pioneer I toward the moon. Use of the telescope helps Sonny believe that they, all of the boys, can go to the moon if they can only learn enough information and be brave enough. Jake drives a corvette and takes Sonny to Big Creek High School on one or more occasions, after Sonny misses the school bus. Jake dates Miss Riley for a time, and is there with her when she is hospitalized for her Hodgkin's disease upon Sonny's return from the National Science Fair. Jake is an important male figure, one who is supportive and cares about things outside work, for Sonny. There is a moment between Jake and Sonny, when Sonny shares that he is afraid of the future, when Jake hugs Sonny, telling him we're all scared of that, when Sonny is reminded of being small and carried up the stairs by his father.

Clinton Caton

Clinton Caton is a Coalwood mine machinist who machines rockets for the rocket boys and their BCMA. Another machinist, Leon Ferro, . Mr. Caton uses red paint to paint Auk XX on one of their rockets, and paints the nose cone as well. He also made many changes to the boys rocket design, upsetting Quentin, including countersinking a rocket nozzle and constructing a flange. Mr. Caton jokes with Sonny by asking him "You think Wernher von Braun could use me down at Cape Canaveral?" Then he tells Sonny that he wouldn't leave, he wouldn't give up the chance to work for Sonny for free. All of the machinists work together and make rockets for the boys. Mr. Caton is one of the men in the machine shop who work desperately to replace Sonny's rocketry exhibit materials after the first ones are stolen at the National Science Fair. When the last rockets are shot off, he and the other machinists are in the crowd, telling rocket-building stories, continuing to support Sonny and the rocket boys.

Mr. Ferro

Mr. Leon Ferro is one of three welders in Coalwood, working for the mine, and is the supervisor of the big machine shop and a company many like Sonny's father. Mr. Ferro is a machinist who requires a trade to do business with the rocket boys. He also requires engineering drawings from Sonny, if the boys want to get work done in his shop. His insistence upon trading teaches Sonny and the rocket boys essential community building skills. Sonny manages to get things that Mr. Ferro and Mrs. Bykovski needs. Mr. Ferro machines a rocket for the boys but it is determined it is too heavy. Mr. Ferro then allows another machinist, Clinton Caton, to handle the project. Mr. Ferro and the other machinists support and help the BCMA and the rockets boys all the way through their National Science fair win.



Mr. Isaac Bykovski

Mr. Bykovski is a machinist-welder who worked alone at the tippie machine shop on the hoot-owl or night shift. Mr. Bykovski has a fondness for Sonny, and is always asking about him. After Quentin and Sonny determine that they need to weld a washer or something onto their casement to be their rocket nozzle, Sonny goes to visit Mr. Bykovski in the middle of the night. When Sonny tells his what he needs, Mr. Bykovski teaches him to solder and then when Sonny can't finish offers to do it for him. Mr. Bykovski helps him on several occasions, until a rocket flies near his dad's Coalwood mine office and Homer Sr. sees it and recognizes it as company property. Mr. Bykovski is punished by being reassigned in the mine as a loader on the evening shift. Later he is involved in a mine accident and is the sole miner who loses his life. When Mr. Bykovski dies, Sonny is despondent and gives up building rockets until he speaks to Mrs. Bykovski, as she is leaving town, and she clears him of all guilt for Mr. Bykovski's death, saying they got used to the higher paycheck, that he could of gone back to welding at any time, and says the one thing Sonny can do for Mr. Bykovski is keep making rockets.

Geneva Eggers

When Sonny gets stuck in a snowstorm near the top of Coalwood mountain, a woman rescues him. Sonny is numb with cold and she insists he come into her little house and warm up. She has him remove his wet clothing, so it can dry out. She asks him about his father, Homer Sr., once Sonny tells her whose son he is. She says she knows his dad, that they grew up together in Gary Holler. She makes him french toast and tells him stories about how his father took care of everyone around him, that when someone had a need his father took care of it. Sonny makes it back home and later tells his father about her helping him. His father gets worried and asks Sonny if he's sure nothing happened. He tells Sonny that when Geneva was a baby, a house on his row in Gary caught fire. He went inside, and couldn't see in the smoke but heard a baby crying and found her and jumped out the window with her. He says he later learned there were ten other people in the house who burned to death. Geneva grew up and after her husband got killed in a mine, she began to run moonshine and see men on the side. His father tells him never to go to her house again. Sonny agrees. Because of what Geneva told him, and what Sonny learns subsequently, he develops and even greater respect for and higher opinion of his father. He realizes he is a hero for saving a baby, and understands his father's drive to work hard and do for other people, including Geneva.

Calvin Suggs

Calvin Suggs father, Pooky, is a man who holds anger at Sonny's father. Pooky's father, Calvin's grandfather, was killed in the mine and Pooky had to quit school and go to work in the mine to stay in Coalwood. He blames Sonny's father for his struggles. His son Calvin Suggs used to beat Sonny up when he was in grade school, each time the miners went on strike. Calvin tries to catch up to and speak to Sonny, but he hides and avoids Calvin. Later Calvin catches Sonny and causes him to lose a bag of rocket parts



in a creek. Sonny walks up to him and punches Calvin in the nose plunges into the creek to try and find his flour sack full of rocket nozzles and nose cones. He is unsuccessful and then gets out of the creek and approaches Calvin and punches him in the nose again. Then Sonny swings at Calvin's friends and they run away. Sonny and Calvin have a conversation about what has transpired. It is clear that Calvin will have a black eye. Pooky calls to Calvin from the porch, goading him to hit Sonny, after some miners sitting with him ridicule his son. Calvin tells his father to shut up and tells Sonny that he's sorry, that he and the other boys just wanted to talk to him. Sonny doesn't believe him. Then Calvin pleads with Sonny to, when he gets out of Coalwood and goes to live on Cape Canaveral, could Sonny please maybe help them get jobs. The other boys nod, their faces hopeful. It is a moment where it is clear that these boys, like many in the town, believe in the future that Sonny is creating for himself. The next day Calvin manages to drop off the wet, dirty flour sack with all of the nozzles and nose cones inside. Somehow he has rescued them from the creek. A friend of Pooky 's ends up purposefully killing Sonny's beloved cat, Daisy Mae. Pooky ends up leaving town after beating Calvin when the boy tries to prevent his pa from beating his ma. Calvin and his mother go to live with a widow, until Calvin can graduate and go into the Army.

Mr. Turner

Mr. Turner is the high school principal who, initially, doesn't seem to believe in Sonny and the boys. He considers them bomb builders, not rocket scientists in development. He isn't supportive, or a fan, until the boys are seniors. Miss Riley takes Sonny to see the principal about participating in the McDowell County Science Fair. Mr. Turner gives Sonny an oral exam, questioning him, to determine if the boy can actually answer tough scientific questions about rockets. Mr. Turner doesn't seem particularly impressed but, upon hearing that Sonny has taught himself about rocketry, and knows his stuff, decides to allow Sonny to compete in the science fair. He reveals that the principal of another high school in the county, Welch High School, has been trying to make a wager about the outcome. When Sonny wins, Mr. Turner wins. When Sonny graduates, Mr. Turner hands him his diploma and tells him "You've brought great honor to this school." Then he adds, "Not bad for a bomb builder." Mr. Turner has Sonny's National Science Fair medal placed in the trophy case next to all of the football awards.



Objects/Places

Coalwood, West Virginia

An unincorporated coal mining town built for the purpose of extracting tons of the bituminous coal underneath it in McDowell County, West Virginia. In 1957, during the time of the rocket boys, the town had 2000 inhabitants, all coal miners and their families. Coalwood was founded in 1905 by Mr. George L. Carter, who rode into the wilderness area on the back of a mule and, after digging and discovering bituminous coal, bought the land and constructed a mine. He built houses, school buildings, churches, a company store, a bakery and an ice house. Then he hired a doctor and dentist. Homes, medical and dental, and community services were provided free to miners and their families. Eventually a football field and school playground were added. Coalwood exists to mine coal, which is the only thing more important in Coalwood than high school football.

Sonny Hickham's House

The Hickham house, like each in Coalwood, was company-owned. It is situated a few hundred feet from the entrance to the Coalwood mine. Sonny blows up the backyard fence of this house with his first cherry-bomb powder fueled rocket. Sonny creates many variations of rocket fuel in the basement of this house, testing the fuel in the coal-fired hot water heater by throwing it into the grate. Sonny and Quentin work down in the house basement together, to develop rocket fuel test mixtures. Sonny dreams his dreams of NASA and space, and how God is communicating through plane geometry, in his bedroom in this house. A disgruntled miner fires a shot into the front room of this house, making a crater in the windowpane, and entering the wall. It is in Sonny's bedroom here that Quentin insists Sonny do the calculations and equations and drawings for the design of their award-winning rocket.

The Tipple

The structure for lifting, sorting and dumping extracted coal from the Coalwood mine is called the tipple. Coal cars roll beneath the tipple and receive loads of coal after which locomotives pull them away.

Big Creek Missile Agency (BCMA)

Sonny forms the Big Creek Missile Agency (BCMA), named in imitation of von Braun's ABMA. The BCMA is formed so that their group of six teenagers can learn all about and build rockets. The members are Sonny, Quentin Wilson, Roy Lee Cooke, O'Dell Carroll, Billy Rose and Sherman Siers. They learn to make engineer drawings, to weld and machine rocket parts, to do calculus and differential equations, all in the pursuit of



creating and shooting off rockets for BCMA. Many adults help and support them, including mine machinists and their teachers. In 1997, just before Sonny retires from NASA, an astronaut friend of Sonny's, Dr. Takai Doi, takes an Auk nozzle and one of the rocket boys science medals up in a space shuttle and the BCMA finally goes into space.

Cape Coalwood

Cape Coalwood is the name the rocket boys give their rocket launch range, after Cape Canaveral, which is actually a Coalwood mine abandoned slack dump. Tons of coal slack, the fine fragments of coal which remained after screening the extracted coal, stretched for a mile or so. Sonny and the rocket boys build a launch pad, a block house for cover, and shoot off their rockets here. It is eventually bulldozed and overgrown by weeds.

Cape Coalwood Blockhouse

The Cape Coalwood Blockhouse is a little shack made of timber, with a tin roof, that the boys build to use for cover after they fire their rockets. At one point school bullies start to destroy it but are forced by the local law enforcement to fix it back.

Mudhole Church

Up the mountain from the town of Coalwood are the colored camps of Mudhole and Snakeroot. A tiny wooden church where Reverend "Little" Richard preached. Sonny Hickham leaves extra copies of the "Bluefield Daily Telegraph" here and the Reverend shares bible stories with Sonny Hickham. Reverend Richard tells Sonny that, "God looks after fools and drunks," and adds, "and I guess he'll look after you too, Sonny Hickman."

The Big Store

The Big Store is a Coalwood mine company store which services the miners and their families and offers credit to the miners and sells everything from hard-toe boots and other mining supplies, including coveralls, helmets, and lunch buckets, as well as clothes for the entire family, electronic appliances, auto parts, home and garden supplies and equipment, musical instruments and more. It has a drugstore for prescription medications and a soda fountain. Sonny buys many of the ingredients for his various rocket fuels, including saltpeter, charcoal, and sulfur, at the Big Store, using both scrip and money earned from his paper route. The front steps of the Big Store is a gathering spot for the community where off-shift miners sat to chew tobacco and chitchat.



The Backyard Fence

Ladies shared information, fence by fence, from one end of the Coalwood valley to the other. When someone has information to share, they head to their backyard fence and ladies in backyards repeat the remarks, "fence by fence, from one end of the valley to the other" (p. 4). Everybody knows the business of everybody else in Coalwood largely because of this backyard "telephone" line. Sonny accidentally blows up his mother Elsie's backyard fence with his first attempt to build a rocket, but the mine carpenter fixes it. Elsie Hickham is standing at her backyard fence, chatting with Mrs. Sharitz, when Sonny tests a rocket fuel mixture which erupts from the Hickham house chimney as smoke and sparks. It is at the backyard fence that Roy Lee reveals to Sonny that a friend of Pooky Suggs killed Daisy Mae. He also shares that Pooky left town and that Calvin and his mother were taken in by a widow.

The Club House

The Club House is a neo-Georgian mansion built on a small hill across from the Big Store. It was built for the son of the town founder, Mr. Carter, but was converted to a boardinghouse in the 1920s due to a housing shortage. During Sonny's time it is used as a boardinghouse for single miners and transient families. Jake Mosby lives there when he is in town. Jake Mosby invites Sonny over to come up on the Club House roof for a surprise. When Sonny gets there Jake has the first telescope he ever had, sent to him by his mother, so he can show the boys the stars, planets, moon and galaxy. They look at constellations and stars a million light years away. Sonny spends a night on the roof alone, in the hopes of seeing the Russian spacecraft Luna I's attempt to land on the moon. Access to the Club House roof gives Sonny the feeling that he is part of what is going on at Cape Canaveral, part of United States efforts to go into space. When America launches Pioneer I toward the moon, it falls to earth and burns up in the atmosphere. The papers call the launch a failure, but Sonny and the boys, who watched it, from the Club House roof, gain certainty that they, the boys on the roof, if they can learn enough and are brave enough, will go to the moon. It is on the roof that Sonny decides to risk a new rocket fuel concoction and melt saltpeter and sugar.

Big Creek High School, War

The high school on the outer reaches of War, sitting beside Big Creek, which is located eight miles from Coalwood. Sonny and his friends ride the school bus, through twisting turning hills and mountains, past Caretta and Premier. Ms. Riley teaches chemistry and physics here. Mrs. Riley chemistry class is Sonny's favorite in his junior year. In the fall of 1958 the high school curriculum is intensified and made more advanced in response to the space advances of the Russians, beginning with the successful Sputnik program launch. When the rocket boys graduate, Dorothy is valedictorian, Quentin is salutatorian, Sherman and O'Dell are in the top ten, and Roy Lee and Sonny are a little further behind. When Sonny graduates Big Creek High School, the principal, Mr. Turner, hands him his diploma and tells him that he has brought great honor to the school. He



teases him and says, "Not bad work for a bomb builder." Sonny and the rocket boys' National Science fair gold medal, for "A Study of Amateur Rocketry Techniques," is put into the high school trophy case with all of the shining football awards.

National Science Fair

The National Science fair is a competition where students present a science project, and generally have a display and/or models, which they are questioned about by a panel of judges. Homer "Sonny" Hickham, Jr. and the rocket boys win gold and silver awards there for "A Study of Amateur Rocketry Techniques."

Auk (I-XXXI)

Named after the great auk, a large extinct flightless bird, the rockets made by Sonny Hickham Jr. and the BCMA began with the Auk I, which flew six feet, and ended with the Auk XXXI, which had a top altitude of 31,000 feet. The boys' experiments with rocket design included the design of nozzles, fins and fuel. They experimented with fuel combinations and graduated from a basic black powder to "rocket candy," a combination of melted potassium chlorate and sugar, to "Zincoshine" a combination of zinc, sulfur, moonshine, all of which contributed to the success of their evolving rockets. In 1997, just before Sonny retires from NASA, an astronaut friend of Sonny's, Dr. Takai Doi, takes an Auk nozzle and one of the rocket boys science medals up in a space shuttle and the BCMA finally goes into space.

Cape Canaveral, Florida

Cape Canaveral is the location of the American scientists and engineers, and later rocket scientist Dr. Wernher von Braun, who strive to catch up with Russian rocketry experts and create and launch American rockets and satellites. When Sonny grows up, and is employed by NASA, he often goes to Cape Canaveral for launches of the space shuttle and other rockets.

The Dugout

The Dugout is the basement of the Owl's Nest restaurant, across the river from the high school in War. Sparsely furnished, the kids come to dance. It is at the Dugout that Sonny is heartbroken when he sees Jima and Dorothy enter and begin to slow dance together; Valentine consoles him by dancing with him and then taking him outside of the Dugout to a car where Sonny has his first intimate experience with a girl.

Sputnik

On October 5, 1957 the Russians launch the satellite Sputnik into space and Sonny Hickham's life is forever changed. After much radio coverage, Sputnik flies over southern West Virginia, though Sonny's father Homer Sr. thinks that President Eisenhower won't allow it. Sonny and his friends see it in the night sky, a bright little ball moving across the stars above. Seeing Sputnik is the first important event that Sonny has experienced happening in Coalwood, McDowell County, West Virginia. He thinks about it repeatedly, it makes him realize that being a boy in Coalwood isn't enough for him. When he gets a copy of Life magazine the following month, with an article on rockets, Sonny determines to build a rocket.



Themes

Hope

Hope is a recurrent theme in the story of Sonny and the other rocket boys.

In the beginning, none of the boys have much hope of a life outside of Coalwood. In Coalwood, West Virginia, a town that only seems to care about mining coal and high school football, boys generally grow up to become miners or join the military. When Sonny builds a rocket, and accidentally blows up his mom's backyard fence, in a blur of wooden splinters and burning debris, his father's greatest surprise is that Sonny attempted to build a rocket. He comments that his youngest son doesn't even know how to replace his bike sprocket chain when it comes off. Sonny's mother Elsie makes him aware that he is a sweet kid, drifting along, not thinking about the future. She explains that the town is dying and that he must find a way to do something, to get out of Coalwood because his dad doesn't have high hopes for him and believes that Sonny will stay in Coalwood and work in the mine. Elsie has hope for a future for Sonny and will send him to college if he can show his dad that he can do something. Sonny struggles to have hope for the future and believe in himself. Some people in his town believe in him and others ridicule him. Sonny and the other rocket boys must develop and sustain hope, faith and trust in their ability to acquire the understanding they need to design and build, and create rocket propellant, in order to make progress toward and fulfill their hopes and dreams.

Initially the rocket boys' hope is to fly a rocket. They have a little success fairly early. With help from machinist Mr. Bykovski, they build their first real rocket which flies six feet. With his help, and later the help of other machinists, the boys continue to design and build rockets. Sonny develops faith in his ability to go to work at Cape Canaveral, and to build rockets, as he and his friends build rockets, use Jake Mosby's telescope to look at the galaxy, moon and stars and as the U.S. rocket scientists are themselves more successful. The rocket boys slowly meet with more and more success. They tweak their rocket and fuel designs and learn how to get their rockets to fly straight, how to create rockets that are light enough to fly higher, and are propelled further by more powerful fuel. Sonny faces his own fears, and deals with challenges, including his father's demands that he stop building rockets, and successfully designs and flies rockets. Sonny also has hopes for developing a relationship with Dorothy Plunk, his dream girl, although his hopes there turn out to be unfounded.

Sonny loses hope in life and his rocketry, and his heart closes and he grows emotionally numb, when Mr. Bykovski tragically dies in a coal mine accident. Sonny feels the death of his friend and support is his fault, as Mr. Bykovski was reassigned to the interior of the mine after he helped Sonny build rockets. First, Miss Riley, Sonny's high school chemistry teacher and rocketry advocate, tells him to stop feeling proud and sorry for himself. Then, Mr. Bykovski's widow, when Sonny tells her how sorry he is about her husband, that there is one thing he can do for her and her deceased husband... "Keep



firing off those rockets!" Sonny finds hope again and returns to rocketry. Sonny develops greater trust and faith and hope that he and the rocket boys will be able to compete in the county science fair, without embarrassing themselves. Sonny, with the help and support of Quentin, designs a sophisticated rocket nozzle and an advanced propellant for their science fair display. "A Study of Amateur Rocketry Techniques!," the science fair project of Sonny and the rocket boys, wins the McDowell County Science Fair. Then they win the science fair area finals in Bluefield West Virginia which qualifies their project to go to the 1960 National Science fair. There, Sonny and the rocket boys' project win a gold and silver medal in their category. Each of the rocket boys goes on to fulfill their hope of going to college. Four of them become engineers and Sonny fulfills his hope of working for NASA.

Sonny's memoir is the study of a boy with no hope or dreams, who acquires hopes and dreams and then, with hard work, faith and perseverance, fulfills those hopes and dreams.

Ingenuity

A theme in "Rocket Boys," is ingenuity.

A boy with no ambition or knowledge of how to make rockets develops ingenuity and teaches himself to design, create and fly rockets. Sonny and his friends learn to cultivate inventiveness, creativity and resourcefulness. There are multiple occasions where Sonny and his rocket boys, must figure out how to obtain rocket components and ingredients to create rocket propellant. The news coverage of the launch of Sputnik piques Sonny's interest. Then he sees the Sputnik satellite cross the southern West Virginia sky. It is the most "marvelous" thing that Sonny has ever seen. The Russian's satellite is all over television and the news and soon Sonny is thinking about rocketry, inspired by German-American rocket scientist Wernher von Braun, and the U.S. hopes of catching up to and surpassing the Russians. Sonny reads an article on rockets, with drawings of the internal mechanisms of different types of rockets, in his dad's November 1957 issue of "Life" magazine. Sonny grows determined to build a rocket. He doesn't let his lack of knowledge, and uncertainty about the specifics of rocketry, deter him. He emulates the information revealed by the magazine article. He shares with the friends who will become his rocket boys that all they need is fuel to put in a tube that has a hole in the bottom. He decides to use the powder from left over cherry bombs for fuel, and an old flashlight body for the rocket body. After a mishap blowing up his mother's rose-garden fence, and receiving a direct command from his mother to persevere and build a rocket, Sonny and his friends continue to develop their ingenuity and conceptualize and build rockets.

Realizing that he can't do this on his own, that he knows nothing about rocketry, Sonny determines to enlist Quentin Wilson, the class genius and joke, in pursuit of his rocket dreams. Quentin is well-read, has a scientific mind, and knows things about rocketry, physics and other useful things. However, the boys aren't able to find a book on rocketry. The absence of specific rocket-building directions means that the boys must



experiment with rocket and propellant, rocket fuel, design and creation. Through trial and error, they theorize about what will work and then experiment and evaluate the results they actually get. In addition to developing ingenuity in being creative in conceptualizing rocket design, the rocket boys have the opportunity to develop ingenuity in dealing with their community. Sonny's father forbids him to build and fly rockets on company land at one point, Sonny, with his mother's support, finds a way around that. On another occasion the rocket boys lack key required rocket materials, they must learn to barter and trade, seeking and acquiring items that community members want, to get the things they need. One of the boys, Sherman, has ideas about how the rocket boys can earn money for rocket fuel ingredients. It takes ingenuity and imagination for him, and the boys, to conceive of and explore ways to generate income. They try digging up and selling scrap metal which ends up requiring too much work for too little income, and nearly costing Sonny his life. Then Sherman ingenuously thinks of digging up and selling ginseng. The ginseng digging endeavor ends up helping the boys earn the money that they need and want, and furthering their rocketry efforts. On other occasions, Sonny exhibits ingenuity, when he needs rocket items welded and machined he figures out which men in town are likely to do that for the rocket boys.

At one point, the boys use their ingenuity to help them create more advanced, and superior, rocket propellants. The boys extrapolate from lessons in chemistry class with Miss Riley, understanding fairly easily how the science applies to their rocketry experiments. They successfully conceive of, and experiment with creating, "zincoshine," a rocket fuel made with moonshine, and other rocket propellants. The boys creatively adapt household items to use to create and test their rocket fuels. Sonny and the rocket boys learn trigonometry, using a textbook provided by Jake Mosby, so they can figure out how high their rockets are flying. The rocket boys also learn calculus and differential equations after Sonny tells them they will have to learn those things, in order to "get all that we need to know" from the book on rocketry that Miss Riley gives them as a gift. Sonny finds a way to convince the principal and Mr. Hartsfield, the math teacher, to offer a special calculus class so the boys can learn to build better rockets. Sonny must ingeniously teach himself calculus, using his father's book "Advanced Mathematics, a Guide for Self-Study." when the limited class is filled and he can't get in. The boys ingeniously also create methods of measuring rocket flight height, creating a device they call a theodolite. Quentin and Sonny must use ingenuity to explain to the principal, and some state troopers, why it is impossible for their rockets to have started a forest fire.

In order to win the National Science fair, Sonny must use the things he has learned, including concepts of thermodynamics, to design perfectly calculated De Laval nozzles. Quentin insists that Sonny do the equations himself. When his dad gives him a tour of the mine, Sonny learns that his father is ingenious as well. Homer Sr. knows as much or more than educated engineers, and designed part of the pressure and ventilation system at the mine. Sonny's mother, Elsie, is a constant inspiration and also a very creative thinker who stimulates Sonny to be the same way. She shares a lesson in ingenuity with him, after a relevant sermon, "If a door closes, find yourself a window and climb through it." The ingenuity, persistence and creativity of the boys pay off. Each of the rocket boys goes to college and four of them, including Sonny, become engineers.



Sonny's ingenuity and determination lead him to fulfill his dreams and become a NASA engineer.

Self-Actualization

One of the themes in Sonny's story, "Rocket Boys," is the idea of a young man coming of age.

In the beginning of the story, Sonny is a fun-loving happy near-sighted, not very athletic kid who loves to read and play with his friends. He lacks a vision of his future, has no idea of what his individual potential and talents might be, and can't see a life for himself outside of Coalwood, West Virginia. Most boys who graduate high school from here either become miners or go into the military. After the Russians launch their first space satellite Sputnik, on October 5, 1957, Sonny's life changes. The frequent newspaper coverage, with stories of American scientists and engineers struggling to catch up with the Russian space efforts begins to fascinate Sonny. He grows inspired by rocket scientists Werner von Braun, who is working in the U.S., and begins to daydream of working for him at Cape Canaveral. Then Sputnik flies over Sonny's back yard, and Sonny has never seen anything so marvelous in his life. He determines to build a rocket. His first effort fails, blowing up his mother's backyard fence. Then his mom, Elsie Lavender Hickham, explains to him that the town of Coalwood is dying. She shares that his father believes he may only be smart enough to work as a clerk in an office at the mine. She wants to send Sonny to college and she tells him he must do his part. She believes he can build a real rocket; his father does not. She asks him to prove his father wrong.

Sonny forms the Big Creek Missile Agency, or BCMA, to build rockets with his friends. His mother is his advocate, for the three years that follow, as he and his friends, the rocket boys, design and build rockets, create rocket propellant, and shoot their rockets off. After much hard work and effort, Sonny must teach himself many things, including calculus, how to design and build rockets, how to create rocket fuel, and has many failures along the road to triumph and success. Sonny faces personal embarrassment as everything is public in Coalwood, and failure leads to ridicule. Sonny wants the love, attention and respect of his company man father, who is constantly focused on the Coalwood mine or his older son Jim. With the support of much of his community, Sonny goes from being a boy who can't do algebra or build a rocket to a boy who understands and can do differential equations, can design rockets and develop rocket fuel, and successfully designs, constructs and flies rockets. At one point he tells Jake Mosby that he is afraid of the future. Jake, a fun-loving young man and an alternate father figure, pulls Sonny into a hug and admits that we all are.

Sonny initially does not wish to participate in the science fair. He is afraid of failing publicly and embarrassing themselves by competing with students whose parents were doctors, lawyers, judges, businessmen and bankers. Miss Riley, the high school chemistry and physics teacher, and Quentin encourage Sonny to consider entering the science fair anyway. Sonny faces a number of set-backs and learns about himself in the



process. After getting a welder, Mr. Bykovski, to weld rockets for him, Sonny's father re-assigns Mr. Bykovski into the mine. In an accident at the mine, Mr. Bykovski dies and Sonny goes into a depression and numbs out. He stops building rockets. Miss Riley reflects to him his pride and arrogance and tells him he will regret it forever if he stops building rockets now. Sonny goes to see Mrs. Bykovski on her way out of town, she tells him there is one thing he could do for Mr. Bykovski and that is to keep building rockets. Sonny finds the courage and heart to both feel and build rockets again. As his knowledge of rocketry and comfort grows, while pursuing rocketry studies, mostly self-taught, Sonny decides to enter their rocketry studies project in the country science fair.

The rocket boys' project wins the McDowell County Science Fair and then at the area finals in Bluefield West Virginia qualifying the project of the rocket boys for the National Science fair. At the 1960 National Science fair, Sonny and the rocket boys' project wins a gold and silver medal in their category. The rocket boys, members of the BCMA sponsor a final day of rocket launches for the community and Sonny's father shows up and Sonny allows him to fire off the final rocket. Sonny finally realizes and is able to accept that his father is unable to provide him with the exact love and appreciation which Sonny so desperately desires, however he has a new respect for his father's work ethic and heroic tendency to care for others. The boys all graduate high school and every rocket boy goes to college.

Sonny becomes an engineer and, 21 years after the BCMA fires its last rocket, finally fulfills his dream and his potential by going to work for NASA.



Style

Perspective

"Rocket Boys," is written from the perspective of an adolescent boy in a town that exists solely for the purpose of extracting bituminous coal from the ground. He comes from a family of coal miners, his grandfather, father, and uncles are all miners. His aunts and mother are the wives of miners. Sonny knows little outside of Coalwood, the tiny southern West Virginia coal mining town in which he lives. He does know that most boys grow up to be miners, or join the military. In recounting his story, Sonny generally does not judge the ideology, or beliefs, or any of the townsfolk. He merely recounts his experiences, his actions, choices, and those of others around him. It is clear that he longs for the love and attention of his father, in a household where hugging is infrequent, but learns to appreciate and respect his father, even more, as he learns about the man's past heroic and noble deeds. A woman his father saved as an infant, from a tiny holler home that was on fire, tells Sonny, "Well that ain't all that happened to your Poppy. He got hit in the head in the Gary mine. He did! Big piece of slate caught him, knocked him silly. It was pret' near a year your Poppy didn't work. Your daddy just took over supportin' his family. Nobody never liked for nothin' while your daddy was around, I can tell you that!"

Tone

Homer "Sonny" Hickham, Jr. generally tells the story of his family life, with his father, mother and brother, and adventures in rocketry, with his rocket boys and at the dawn of America's space age, in a sincere, straightforward and conversational fiction-like style. His English seems modern enough, though Sonny occasionally uses rustic and colloquial, or native West Virginia, language or even era appropriate slang to punctuate his tale. This writing tone choice reveals time and place in the most charming, authentic and heartfelt way possible. When Sonny's mom speaks to him about his future, and her desire for him to prove his father wrong, and successfully build and launch a rocket, she tells him in a lovely sing-song, "I-am-a-counting-on-you," while tapping his nose with every word. The personalities and characters of the townsfolk are often revealed in their dialog and actions. Although the story is told very factually, there is an empathetic and emotional quality in the writing, a tone which is almost nostalgic. It is clear that Sonny has a love for the time, place and people of his past experience and, the series of events makes clear, those people are worthy of that love. Sonny occasionally shares a descriptive phrase that is as or more beautiful than fiction prose. For example, he writes, "A gasp of steam erupted from an air vent beside the tipple, and I followed the cloud skyward, watched the water droplets disperse. A big golden moon hovered overhead, and the vapor formed a misty circle around it. Sparkling stars flowed down the narrow river of sky the mountains allowed" (p. 45).

Structure

The structure of the text of "Rocket Boys" is memoir told in chronology. Written by the adult man who experienced the events, the narrative is told sequentially, in twenty-six chapters, in the order that the events occurred. The story is creative non-fiction, a memoir written in a novel-like fashion, which makes the story and even more compelling read. Again, although the plot is ordered as events occur, and many of the names are the real names of the individuals involved, the author does share in an author's note in the beginning of the book that he has taken the liberty of using pseudonyms for certain characters, and combining two or more people into a single character for simplification and clarification. Each chapter naturally segues into the next, and the chapters are titled topically. The story begins in 1957, when the author is fourteen years old, and concludes in 1960 when Sonny is seventeen and graduating high school. In his epilogue, he shares what happened after, how all of the boys went to college, several, including Sonny, became engineers, and Sonny eventually works for NASA.



Quotes

"For Dad, Franklin Delano Roosevelt was the Antichrist, Harry Truman the vice-Antichrist, and UMWA chief John L. Lewis was Lucifer himself. I'd heard Dad list all their deficiencies as human beings whenever my uncle Ken—Mom's brother—came to visit." p. 17

"I knew to do that I'd have to prepare myself in some way, get some skills of some kind or special knowledge about something. I was kind of vague on what it would be, but I could at least see I would need to be like the heroes in my books—brave and knowing more than the next man. I was starting to see myself past Coalwood." p.30

" 'I believe you can build a rocket. He doesn't. I want you to show him I'm right and he's wrong. Is that too much to ask?' " p.44

"I laid out my plan. I was forming a rocket club to be called the Big Creek Missile Agency (BCMA), named in imitation of von Braun's ABMA." p.77

"At lunch during the following days, Quentin and I worked on how to build a rocket, sketching out crude drawings and theorizing. We were proceeding mostly by instinct." p.78

"I thought how ironic it was that Jake's telescope could see stars a million light-years away, but not the town it was in. Maybe I was that way myself. I had a clear vision of my future in space, but the life I led in Coalwood sometimes seemed to blur." p. 137

"Sputnik was launched in the fall of 1957. In the fall of 1958, it felt to the high-school students of the United States as if the country was launching us in reply." p. 140

" 'And when this rocket blows up and you don't have a clue what caused it?' Quentin asked, his face pinched. 'What will you have learned then?' " p. 230

" 'Do you not understand how our audacity will be perceived? Do you not understand, even now, what we have already accomplished, us coal miners' kids down in deepest West by God Virginia?' " p. 231-232

"It was as if somebody had reached up inside me and turned off a switch. I felt dull and thick. In the following days, I quit building rockets, quit studying my book, and quit going to the machine shop." p. 251

" 'Sonny,' she said, 'a lot has happened to you, probably more than I know. But I'm telling you, if you stop working on your rockets now, you'll regret it maybe for the rest of your life.' " p. 254

"There is was, the West Virginia thing—the almighty job. I should have known that was coming. Oh, yes, we all had our job to do in this state, breaking our backs to ship our



wealth out to the world so we could turn around the next day and do it all over again for next to nothing." p. 254

"From the moment I pressed the firing button the following weekend, I knew it was our best rocket yet. A hot, conical flame spurted from Auk XXI's base as it accelerated off the pad. It darted for the blue sky, a long white contrail flowing out behind it." p. 256"

"When it got dark and a river of stars flowed overhead, we spread out our sleeping bags and laid down on them and talked. After we exhausted the topic of females, we considered the future. We agreed we were all going to make it into space." p. 263

"In the fall of 1958, the television and newspapers were filled with stories about American rockets roaring successfully into the sky. A-OK! We have lift-off! All systems go! The language of our rocket engineers became part of our everyday speech." p. 270

"Auk XXII-A didn't disappoint. It leapt with savage energy from the pad, zinged up the guide pole, and split the valley with its thunder. The crowd backed away and ahhed as the rocket disappeared at the top of a column of tremendous of white, boiling smoke." p. 279

"Quentin peered at it and put his hand on my shoulder. 'Prodigious, Sonny, prodigious.' He looked at me with heightened respect. 'You know, every so often I think you really are a rocket boy.' " p. 322-323

"I went to Russia and sat across the table from the men who launched Sputnik I, and worked with men and women from Japan, Canada, Europe, and across the planet who shared the vision of space exploration with me. My career with NASA was everything I hoped and dreamed it would be." p. 364



Topics for Discussion

In the opening paragraph of this book, Homer "Sonny" Hickham, Jr. writes that "I didn't know my hometown was at war with itself over its children and that my parents were locked in a kind of bloodless combat over how my brother and I would live our lives" (p. 1). What does he mean by this statement? Why does Homer Sr. want Sonny to be a mine engineer? Why does Elsie want Sonny to find something outside the mine to work and live for? Which of Sonny's parents is right in what they believe?

How would you explain this book to another person? Is this a story for males or for females, or both? Before you read the book, were you afraid that the story would be too technical or boring because it deals with science and math and is based on history? Is this memoir the story of a group of boys with a dream or the tale of a small coal mining town and the people who live there? What is the point of this story?

Do you believe that Homer Hickham, Sr. and Elsie Lavender Hickham love each other? What is it that they mostly disagree about? What is the meaning of the mural that Elsie is painting in the kitchen? Do you think Elsie means it when she tells Homer Sr., "Over my dead body," in response to his statement that Sonny is thinking of becoming a mining engineer? Do you think Elsie should have moved to the beach as originally planned, without Homer Sr., after her husband changes his mind and decides not to leave Coalwood?

This memoir is also about the rewards and costs of ingenuity. Who exhibits ingenuity in this story, and how is that encouraged or discouraged by other people in the story? Is ingenuity a trait that will bring success today? Can this story help people to understand, cultivate or develop ingenuity or creativity in their own lives? How was Quentin ingenuous? What kinds of creativity did Sonny display? How about the other boys, did they display or develop ingenuity? How did the adults encourage the boys to develop ingenuity? Did any adults display ingenuity? What role did ingenuity play in leading the rocket boys to success?

In Chapter 22, Mr. Turner, the Big Creek High School principal, wryly tells Sonny, "In the queer mass of human destiny, the determining factor has always been luck," but a theme in the book is that hope plus direction and extraordinary effort leads to achievement and success, not luck. What did Sonny hope for? How did he develop a direction in life? Who inspired him to dream of a larger future, outside of Coalwood, and how did they do so? Was luck a factor in Sonny and the other rocket boy's rocketry success? What extraordinary efforts did Sonny, or any of the other rocket boys, make which led to their success? Which do you think determines life success, luck or hope, ingenuity, and extraordinary effort?

What does it mean that Sonny's father is a company man? Why would Homer Sr. take his son Sonny into the mine, risking his wife Elsie's anger? Why does Homer Sr. anonymously provide rocket materials when he seems dead set against rocket building and doesn't seem supportive of Sonny's goals and dreams? How does the tension



between his parents motivate Sonny? How does Geneva Eggers help Sonny to better understand his father? Why don't Sonny and his father resolve their differences?

Why was the concept of entropy the hardest thing for Sonny's father to learn? How did his difficulty in learning that concept relate to his problems with Elsie and Sonny? What parallels do you see between Homer Sr.'s inability to see the changes coming for Coalwood and his difficulty in understanding entropy, the first law of thermodynamics, or the tendency of everything to move toward confusion and disorder over time? Discuss the effect of entropy on Homer Sr., Coalwood, and the entire Hickham family. How does it affect you when Homer Sr. says, "Because even though I know it to be true, I don't want it to be true. I hate that it's true. I just can't imagine what God was thinking" (p. 135).

In "Rocket Boys," Sonny goes from being a boy who doesn't understand algebra to teaching himself calculus, thermodynamics and rocketry. What was the difference between Sonny's previous lack of motivation to learn math at school and his new found motivation to learn math, science and physics, after the launch of Sputnik? Are there topics which you might be naturally motivated to learn, or teach yourself, if your had the opportunity? How might self-motivation bring success in your life?

In chapter one of "Rocket Boys," Sonny writes, "For all the knowledge and pleasure they gave me, the books I read in childhood did not allow me to see myself past Coalwood." Almost all the grown-up Coalwood boys I knew had either joined the military services or gone to work in the mine" (p. 11). What had to happen in order for Sonny to have a future vision outside of Coalwood, different from the other boys that he knew, and develop some specific life goals? Discuss how Sonny's attraction to Dorothy Plunk, the launch of Sputnik, and a rocketry article in the November 1957 issue of "Life" magazine affected his ability to envision a more exciting future for himself. What has or would inspire a vision for your life future?

Many of the Coalwood townspeople support Sonny and the rocket boys, but some people in town do not. What drives the tensions between the townspeople? How does that affect Sonny and the rocket boys? In Chapter 25, why does Sonny feel foolish and selfish for asking for help in replacing his stolen rocket items? How does his town being on strike affect Sonny's plight? Discuss how the union men used Sonny's need, to have rocket components machined, to their advantage and help them end the strike.

Discuss Sonny's dream to build and launch rockets and how his and the rocket boys success in doing so benefits the town? Why does Basil Oglethorpe of the "McDowell County Banner," get so excited about the rocket boys and want to write about them in his local paper? How do the rocket boys get support from members of the Coalwood church? How do the rocket boys generate interest in their launches? Why do, by the end of their three years of building and launching rockets, so many area residents attend the rocket boys rocket launches? How does the year-long suspension of the local football team affect interest in the rocketry efforts of the rocket boys? Share your thoughts about what Quentin means when he says, "Do you not understand how our audacity will be perceived? Do you not understand, even now, what we have already

accomplished, us coal miners' kids down in deepest West by God Virginia?" (p. 231-232).