

Advice on becoming a true scientist from Sinclair Lewis's *Arrowsmith*

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Sinclair Lewis's most widely-read novels are *Main Street* and *Babbitt*. In both of these novels his main characters were pathetic participants of narrow-minded American suburbia. Mark Schorer, the eminent Sinclair Lewis scholar, reports that Lewis wrote his editor in New York, as he was finishing *Babbitt* in 1921, that in his next novel he would like his central character to be heroic. That novel was to be *Arrowsmith*. Published in 1925, it is a long reflection on medicine, science research, and the difficult search for true understanding untainted by fame, fortune, love, humanitarian endeavors and anything else that might detract.

Arrowsmith is one of America's most profound works of fiction centered on science -- medical science in this case. Sinclair Lewis came from a family devoted to medicine. His father, grandfather, brother and uncle were all doctors. He contemplated becoming one himself. In preparing to write *Arrowsmith*, he spent countless hours with Paul de Kruif, an esteemed immunologist who had taught at the University of Michigan and had worked closely with such famous scientists as Jacques Loeb. Together they drafted a detailed fictional history of Martin Arrowsmith and his mentor, Max Gottlieb, who serves as the ideal of an uncompromising scientific genius. These fictional lives draw heavily on de Kruif's experience with real colleagues that *Arrowsmith* scholars have taken great pains to identify.

Over 75 years after *Arrowsmith* was published, every professional scientist can still see the sharp commentary on the challenges and thrills of scientific research. The forces that pulled the struggling young scientist Martin Arrowsmith away from quality science research are very nearly the same forces that many experience today. The novel works not just because Lewis had extraordinary ability as a novelist, but also because Lewis interviewed de Kruif so thoroughly about the life of a research scientist and was able to bring that knowledge alive in an interesting fictional account.

Max Gottlieb, *Arrowsmith*'s mentor, is a unique character among prominent 20th century works of fiction. It is apparent that Lewis and de Kruif intended that Gottlieb embody the ideal scientist. He was a displaced German Jew from Saxony who demanded excellence and purity in science research, and who tended to denigrate people around him as hacks, including most Americans who had no patience for the "beautiful dullness of long labors." Gottlieb's implacable devotion to purity and precision led him to hate scientists who rushed unfinished work into publication more than he hated "the devil or starvation." He preached "the loyalty of dissent, the faith of being very doubtful" *Arrowsmith* fell under his spell, and worked the rest of his life, in fits and starts, to achieve the science ideal that Gottlieb exemplified.

When Arrowsmith first came to Gottlieb with a desire to work with him, Gottlieb wasted no time teaching Arrowsmith what it means to be a scientist:

There are two kinds of students the gods give me. One kind they dump on me like a bushel of potatoes. I do not like potatoes, and the potatoes they do not ever seem to have great affection for me, but I take them and teach them to kill patients. The other kind -- they are very few! -- they seem for some reason that is not at all clear to me to wish a liddle bit to become scientists, to work with bugs and make mistakes. Those, ah, those, I seize them, I denounce them, I teach them right away the ultimate lesson of science, which is to wait and doubt. Of the potatoes, I demand nothing; of the foolish ones like you, who think I could teach them something, I demand everything.

Arrowsmith did get the opportunity to work with Gottlieb, and labored many long hours in order to impress Gottlieb as much as any other reason. When Arrowsmith completed some experiments on a serum, he came to conclusions at odds with the prevailing views of science. Gottlieb challenged young Arrowsmith:

*'Young man, do you set yourself up against science?' grated Gottlieb
'Do you feel competent, huh, to attack the dogmas of immunology?'*

'I'm sorry, sir. I can't help what the dogma is. I only know what I observed.'

Gottlieb beamed. 'I give you, my boy, my Episcopal blessings! That is the way! Observe what you observe and if it does violence to all the nice correct views of science -- out they go! I am very pleast, Martin. But now find out the Why, the underneath principle.'

Gottlieb's pleasure was a jolt of adrenaline to Arrowsmith, who "trotted off blissfully, to try to find (but never to succeed in finding) the Why that made everything so." It is a sentence that accurately reflects the growing up of a scientist, who, when first experiencing success, thinks that answers to the big Why questions are only a few weeks away, but ultimately finds that progress is very slow for true understanding and progress.

Martin Arrowsmith graduates from college and ambles through several unsatisfactory positions, where he encounters the frustrations of dealing with simpletons, hucksters and materialists. He also finds nobody that really understands the way of thinking that Gottlieb had taught him. Despite the pressures to be more practical in his activities at the Rouncefield Clinic, Arrowsmith publishes his "streptolysin paper" in the Journal of Infectious Diseases. None of his colleagues read the paper or are impressed by his efforts. His spirits are lifted when he gets a letter from Gottlieb, who says that he has read the paper carefully and likes it. He tells Arrowsmith, "I feel you should be tired of trying to be a good citizen and ready to come back to work." He wants Arrowsmith to join him at the McGurk Institute in Chicago. Arrowsmith does.

When Arrowsmith arrives, Gottlieb asks him what he wants to do at the McGurk Institute. Arrowsmith responds, "Why I'd like to help you", but Gottlieb will have none of that. "You are to do your own work. What do you want to do? This is not a clinic; wit' patients going through so neat in a row!" Gottlieb explains.

Arrowsmith then tells Gottlieb what he would like to do, but Gottlieb is uninterested in the details. Nevertheless, Gottlieb uses the moment as an opportunity to teach Arrowsmith that although he does not care what he specifically does, he is expecting Arrowsmith to share his vision of what it means to be a scientist. Gottlieb delivers a long speech to Arrowsmith, which summarizes in the most plain language what he calls his "religion of science":

To be a scientist -- it is not just a different job, so that a man should choose between being a scientist and being an explorer or a bond-salesman or a physician or a king or a farmer. It is a tangle of ver-y obscure emotions, like mysticism, or wanting to write poetry; it makes its victim all different from the good normal man. The normal man, he does not care much what he does except that he should eat and sleep and make love. But the scientist is intensely religious -- he is so religious that he will not accept quarter-truths, because they are an insult to his faith.

He wants that everything should be subject to inexorable laws. He is equal opposed to the capitalists who t'ink their silly money-grabbing is a system, and to liberals who t'ink man is not a fighting animal; he takes on both the American booster and the European aristocrat, and he ignores all their blithering. Ignores it! All of it! He hates the preachers who talk their fables, but he iss not too kindly to the anthropologists and historians who can only make guesses, yet they have the nerf to call themselves scientists! Oh, yes, he is a man that all nice good-natured people should naturally hate!

He speaks no meaner of the ridiculous faith-healers and chiropractors than he does of the doctors that want to snatch our science before it is tested and rush around hoping they heal people, and spoiling all the clues with their footsteps; and worse than the men like hogs, worse than the imbeciles who have not even heard of science, he hates pseudo-scientists, guess-scientists -- like these psycho-analysts; and worse than those comic dream-scientists he hates the men that are allowed in a clean kingdom like biology but know only one text-book and how to lecture to nincompoops all so popular! He is the only real revolutionary, the authentic scientist, because he alone knows how liddle he knows.

... But once again always remember that not all the men who work at science are scientists. So few! The rest -- secretaries, press-agents, camp-followers! To be a scientist is like being a Goethe: it is born in you. Sometimes I

t'ink you have a liddle of it born in you. If you haf, there is only one t'ing -- no, there is two t'ings you must do: work twice as hard as you can, and keep people from using you. I will try to protect you from Success. It is all I can do. So I should wish, Martin, that you will be very happy here. May Koch bless you!"

Five minutes later, Arrowsmith finds himself alone in the laboratory, enraptured by the possibilities of his new position, and prays the "prayer of the scientist" that Gottlieb would have smiled upon if he had heard it:

God give me unclouded eyes and freedom from haste. God give me a quiet and relentless anger against all pretence and all pretentious work and all work left slack and unfinished. God give me a restlessness whereby I may neither sleep nor accept praise till my observed results equal my calculated results or in pious glee I discover and assault my error. God give me strength not to trust to God!

Arrowsmith experiences both success and tragedy as a result of his calling as a pure scientist. He is committed to Gottlieb's ideals to the very end -- it seems he has no choice. He also knows that there is little chance that he will make significant progress in revealing new science knowledge, but he finds a kind of solace in the attempt and the thrill of just maybe being lucky and contributing to something big. He was sustained by the encouragement Gottlieb gave him, "So many men, Martin, are good and neighborly; so few have added to knowledge. You have the chance!" It is a story every person who has (or had) aspirations of being a "pure scientist" can appreciate. It is a novel of deep reflection about the scientific pursuit that enlightens as much as it entertains.