

CLARK UNIVERSITY  
 COMMENCEMENT ADDRESS — 1984

By

Dr. Isaac Asimov

Thank you. Thank you. Ah, Ah. I think I'll quit while I'm ahead. President Appley, trustees, faculty members, honorees, graduates, parents, friends, passers by, ladies and gentlemen. I suppose you all know what college presidents are like. They are creatures in search of life's pleasures, and I always feel it is my duty to instruct them in the realities and make them aware of occasional misery. And I remember about ten years ago, as I was walking in the academic procession with a college president, I said to him out of the corner of my mouth, I said, "What shall I talk about, by the way?" And the scoundrel replied, "About twenty minutes." Sort of killed it 'cause I like to talk for three hours. Would you believe that President Appley made the same soft plea to me last night? And so I will, I'll look at my watch now, it's two thirty.

I want you to know that Clark's past, Clark's history is sufficiently rich and varied so that many people can find in it many ways of admiration, but I, as the president said, think of Clark in terms of Goddard, Robert Hutchings Goddard. I have to. After all, I'm a science fiction writer, first and foremost, and what is more science fictiony than rockets through space to the moon? And who was the first to actually fire a real rocket of the type that eventually reached the moon? It was Goddard, in 1926.

And he did not do this without ridicule and opposition. And perhaps the most amazing piece of opposition appeared in my newspaper, not the one I work for but the one I read, which I honestly believe is the best in the world, The New York Times. But even Homer nods, and even the sun has spots, and even The New York Times can be foolish, and in an editorial shortly after one of Goddard's rocket flights, they castigated Goddard for lacking the knowledge of physics that every high school student should have, which is that by the law of action and reaction, the rocket must push against something and something must push back against the rocket. And since in the vacuum of space there is nothing to push against, there is nothing to push the rocket, and, therefore, as you can plainly see, a rocket cannot travel in space. Now this showed an amazing lack of understanding of the law of action and reaction, but nevermind, I believe in free speech. The New York Times has a right to be wrong. In any case, what pleases me, though, is that after, after we've reached the moon, after Neil Armstrong stood on the moon, The New York Times had--I'm making this up, I wasn't there; but this is what may have happened--The New York Times editorial board held a meeting and decided they were not in a position to uphold the minority view that a rocket couldn't possibly have done that,<sup>and</sup> so they apologized for that, for that editorial which had been published forty-three, forty years before. It was not the first time The New York Times had been wrong. Back at the beginning of the century, there was a gentleman named Langley, who was trying to fly an airplane, a heavier-than-air machine. People could travel through the air by powered flight, but only in dirigibles, only in

devices that floated on air. If the engines in the dirigibles failed, the dirigible would nevertheless float and remain in the air and could be brought down slowly and safely, if no one lit a match. Well, it's obviously much more difficult to do it for a heavier-than-air machine, where the motors must keep going at all times, because if they failed there was no floating. Down came the plane. And there were not lacking gentlemen who argued that it was literally impossible for a heavier-than-air machine to be practical. But The New York Times, after learning that Langley's third attempt had failed--entirely by the way, because the engine wasn't quite powerful enough--later on they built an exact replica of his third plane and put a stronger engine in it, and it flew. But it did not fly the first time that Langley tried it, and The New York Times wrote an editorial decrying the waste of public funds because Langley had spent \$50,000 of government money on his experiments, and this was an unconscionable amount when, as The New York Times said, man would not fly for a thousand years. They were a little off. Men flew nine days after the editorial appeared. They flew on December 14th, 1903, down at Kitty Hawk, and the editorial appeared December 5th, 1903, which is a really bad case of futuristic astigmatism. As far as I know The New York Times never apologized for that. Now I tell you this because a few years ago The New York Times laughed again, and this time it wasn't funny at all because, although they didn't know it, they were laughing at me. And I'll tell you what happened. Back a few years ago, in 1979 I believe, a group of scientists discovered that just about 65 million years ago something happened

which coated the earth with material that was high in the rare metal iridium. They have looked (in) a number of different places on earth, and they always find a thin layer rich in iridium at a place in the sedimentary rock which can be dated just about 65 million years ago. Now 65 million years ago is a very interesting date because that's when the dinosaurs became extinct. All of them. Quite suddenly, as geological time goes, and the feeling was that the only place the iridium could come from would be from something outside earth, (and there) had to be something that would create enough of a bang to spread the iridium all over the earth. And so there came to be talk of a collision between an asteroid and earth which threw up many thousands of cubic miles of dirt and soil into the stratosphere which slowly settled over months, possibly--they thought at first--years and darkened the sky so much that the sun could not be seen through all that time. It was an asteroidal ~~evening~~ night, and of course without sunshine the temperature drops, so it was an asteroidal winter; and the plant life all died, and the animals that lived on the plants all died. And the only things that survived were some seeds and some tubers and some small animals that could live on those seeds and tubers or that could live on the corpses of the large animals that died, and so on. So that life did not become extinct; but when the sun finally shone again, it was on a different kind of life, a different earth altogether, in which all the large, magnificent animals were <sup>nothing</sup> dead, and <sup>in</sup> which small inconsiderable animals, which had existed just as long as the dinosaurs, now for the first time were able to develop and spread out and evolve into all kinds of environmental niches. And these were

the mammals and the birds and eventually, of course, us. Now then, some people said that who knows when there might be another asteroidal strike, and this time we'd be the ones who'd be in trouble. And so it might be a good idea to plan for a future in which we would have a constant watch out in space for the coming of various asteroids that do occasionally approach the earth within a few million miles and see if any of them alter their orbits as a result of planetary perturbations to a point where they might strike the earth. It might then be necessary to hit them with a hydrogen bomb or something, vaporize them, convert them into a mass of small pebbles, which even if they then hit the earth, simply burn up in the atmosphere in a colossal display of cosmic fireworks and no damage is done to us. I was very pleased when this was suggested about 1980 because I had suggested the same thing in an article I wrote in 1952, nearly a generation earlier. That's one of the advantage(s) of reaching an advanced age. You can think of things decades before other people. And The New York Times thought that was the funniest thing they'd ever heard of, and they wrote a very comic article on the editorial page, making fun of this idea. Well it's not such a funny idea after all, and who knows, maybe millions of years from now they will finally give me credit, but I'll probably be dead by then.

What happened is that people investigating the fossil record now think that the dinosaurian extinction is <sup>nothing</sup> unique at all, but that every 26 to 28 million years there's a great dying in which many species become extinct in which a great catastrophe strikes. Well what is there that can possibly happen every 26 to 28 million years?

So far, the only thing anyone has been able to think up is that the sun may have a companion star, a very small star which is so small that it doesn't really shine. It's what you might call a brown dwarf. It's just hot, but it doesn't shine. And it's generally very, very far away, a couple of light years, but it has an elliptical orbit. It circles the earth in 26, it circles the sun, I'm sorry-- I'm back in ( <sup>Ptolemaic</sup> Talameic Times )--it circles the sun in from 26 to 28 billion years. And of course in so doing in an elliptical orbit, there's a time when it approaches the sun relatively closely, then it goes out relatively far, it comes in relatively closely, and so on. And each time it comes in relatively closely, it is still several times as far away as Pluto, but it interferes with a cloud of comets that astronomers have thought now for thirty years (have) circled the sun, hundreds of billions of small icy objects, not very large as such objects go, and not very noticeable unless some sort of perturbation sends them down into the neighborhood of the inner solar system, in which case they are heated up by the sun and develop a dust cloud and a long tail and become the comets we all know and love. And when this companion star, which has received the name of Nemesis, comes relatively close to the sun it goes through the cloud of comets, causes a lot of them to drop into the inner solar system, so that if there were intelligent beings on earth, they would see a beautiful display of perhaps a million comets over the space of a hundred years, and maybe twelve of them would hit the earth and create the wave of extinctions.

Now, it may be that this notion of periodic extinctions is illusory and that as scientists further study the record they find

there's no such thing, or if it isn't illusory, if it really happens, it may be that the earth does not, that the sun does not have a companion star and that the cause of the extinctions is something altogether different, but...and it may be that if the extinctions do take place and the companion star exists, the next time it'll come close will be something like 15 to 17 million years from now. And it may well be that human beings will not be on the planet 15 to 17 million years ago, ah, from now; in fact, there's some question about 15 to 17 years from now. And there may be no intelligent beings at all, in which case there's nothing anyone can do. But if the theory is correct, and if there is a companion star, and if it approaches 15 to 17 million years from now, and if there are human beings or intelligent descendants still on earth, you can certainly bet your bottom dollar that if technology and science continue to advance we will have the earth surrounded by detecting devices in space that will be all set for calculating by advanced computers the orbits of every comet that comes in closer than the orbit of Jupiter, that any one of them that approaches within a million miles of earth is going to be blown up and that that The New York Times, if it still exists, will have to apologize again. To me personally if I'm around.

Well, why do I tell you all this? I tell you really to explain that there's nothing wrong in being wrong, but there is something wrong in thinking you know it all, because you don't. You young people have just come through four years at a first-class university, and you may have the comforting feeling that in certain subjects you now know it all. If so, you are doomed to disappointment.

It isn't so. And I'll tell you why. It's because if Clark University has done its job, and I think it has, it hasn't taught you the contents of knowledge. It hasn't poured facts or supposed facts into your head and then shut the skull and brushed off their hands and said, "Well, that's done." It would be far better and more significant and more meaningful if they didn't teach you a single fact but taught you how to think and let you discover the facts for yourself. Thinking is what counts. If you remember that there is a process of thought, a process of logic, a process of approaching the world which takes nothing for granted, which doesn't rely on pure authority, which isn't the sort of thing you believe 'cause everyone says so, but at the same time (leads) you to realize that you can't personally test every single fact yourself. There isn't enough time, you don't have the strength. If you try to do it all yourself, you'd never get past (Thalies of Milietis), but you have to be able to weigh the facts that are given you. Consider the sources, consider the inherent logic, and decide which are more credible than others. And accept some and not others, but always tentatively, always ready to change if further evidence comes in. Think, then, how important it is that you not negate what you have done here but that you continue throughout life to think. Consider how important it is to fight any attempt from any source to make thinking a crime. If there is one thing that above all must be resisted, it is any attempt to convert a college education into received truth, any attempt to call upon the government to decide by legislation and majority vote what is correct, what should be believed, what should not be believed. In the state of Texas, they



accept textbooks for all the schools, all the secondary schools in the state. One group of people accepts them. And there are people who go over all the possible textbooks, and if there's anything in them that they don't like, those textbooks will probably be rejected. And these people know the truth. They know that evolution is wrong. They know that the earth is only 10,000 years old. They know that the species of living creatures were created from the start different. They know this, they allow no discussion of it. They would forbid evolution if they could. Since they can't, they demand equal time, not at the discretion of the teachers, but by legislative fiat, and this sets a precedent which can destroy the United States intellectually. It can deprive us of our future. It can disgrace us before the eyes of the world. And it (can) ruin the lives of future generations of young people. I would like to think that this will never happen, that always we can be taught whatever seems to be logical and the result of thought and research and opinion without the government ever stepping in to tell us what we may learn and what we may not learn. The day the government does step in is the day that America, as we know it, no longer exists, and may that day be far distant. Thank you.